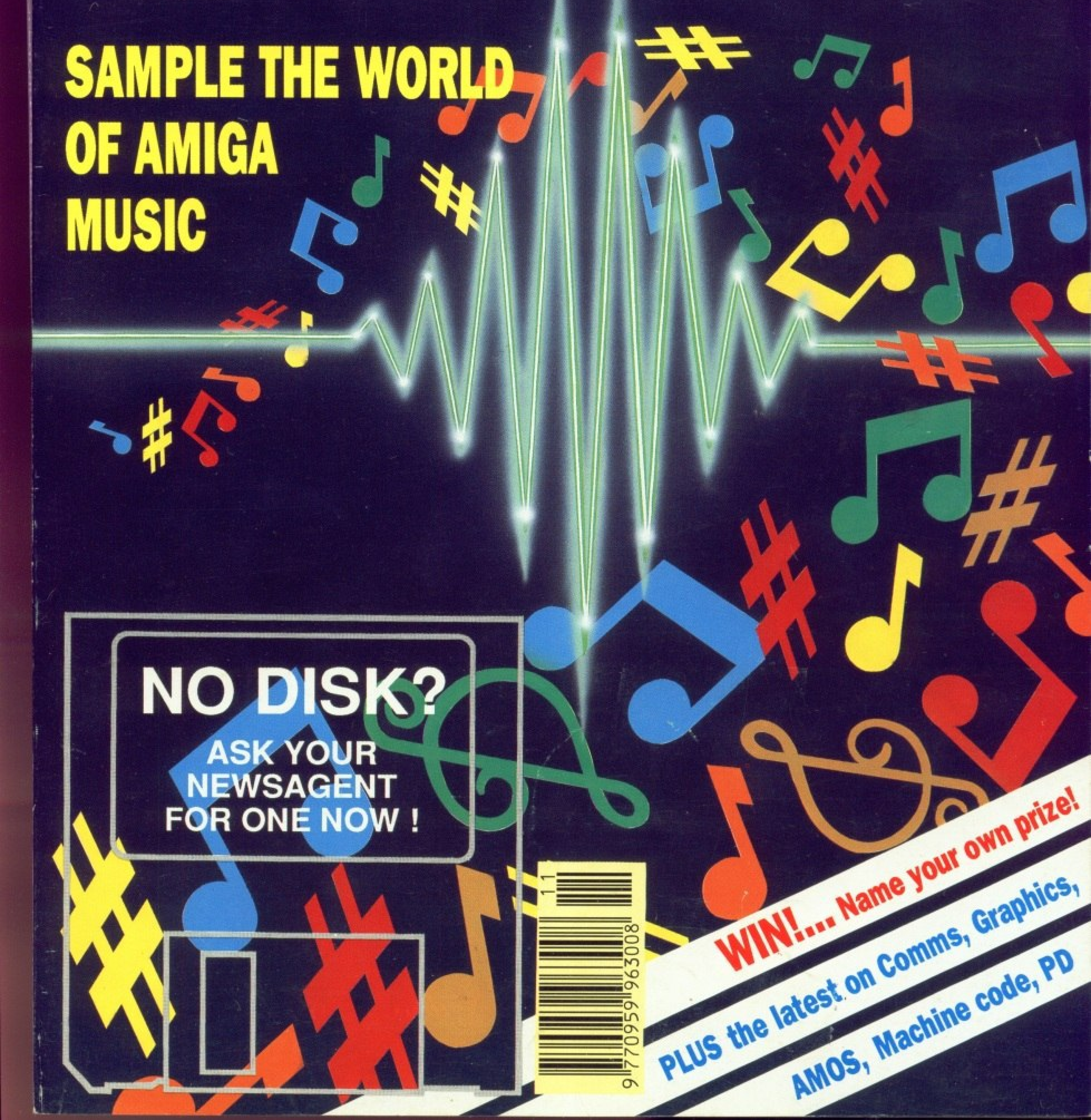
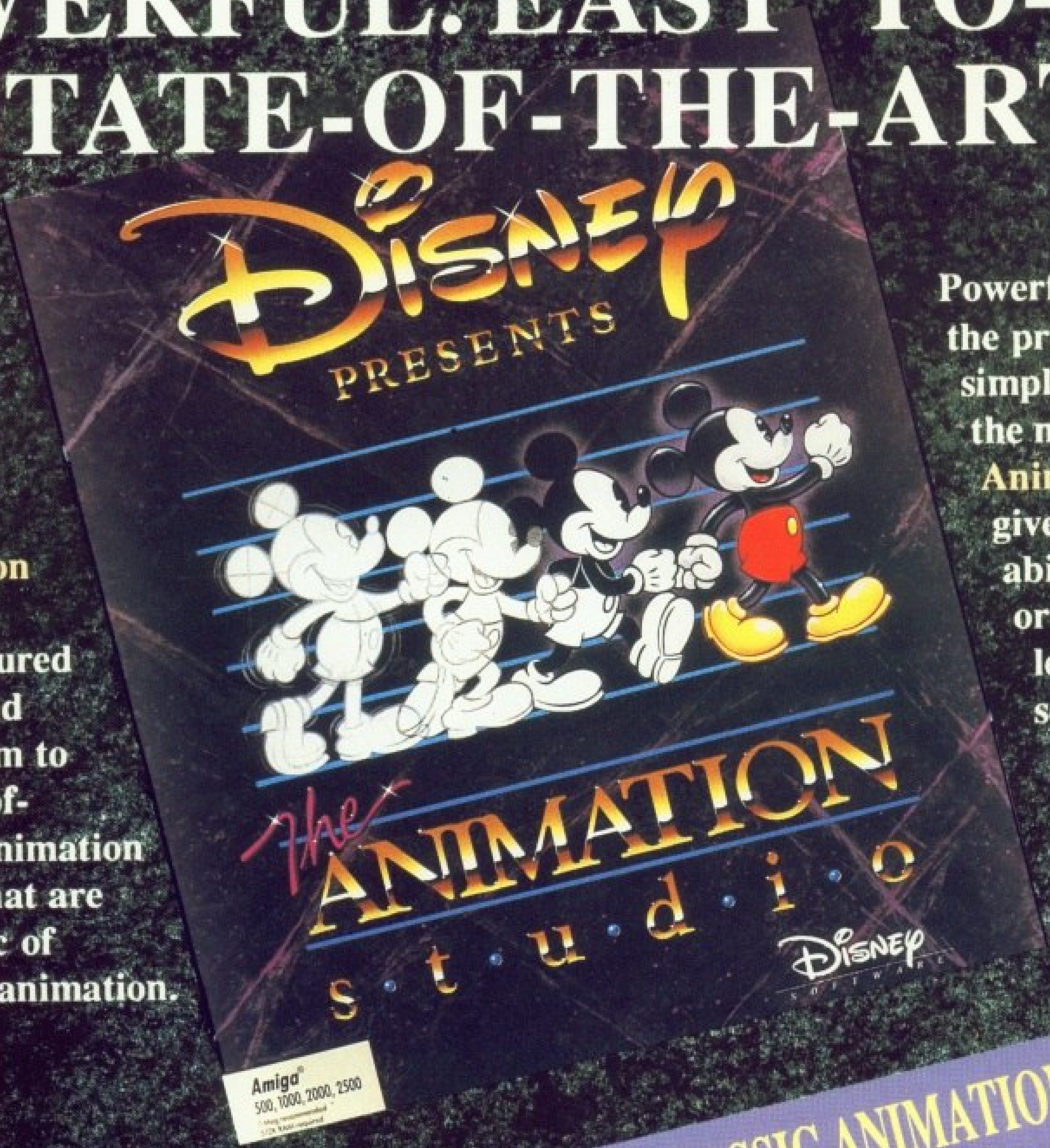
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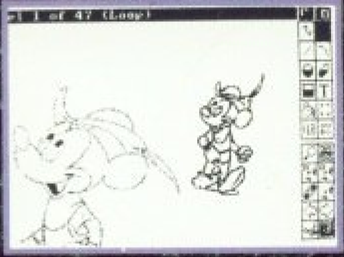
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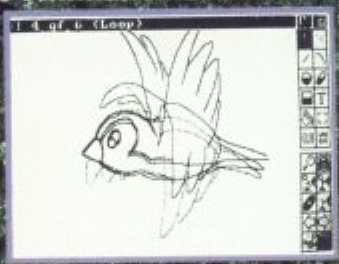
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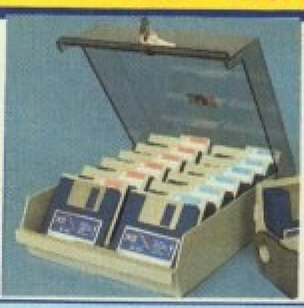
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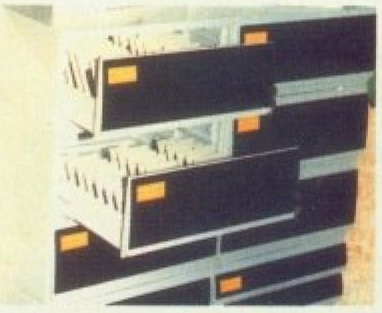


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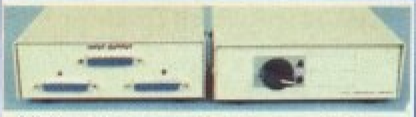
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Published by:
Interactive Publishing Ltd,
Europa House, Adlington Park,
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Editorial:	0625 878888
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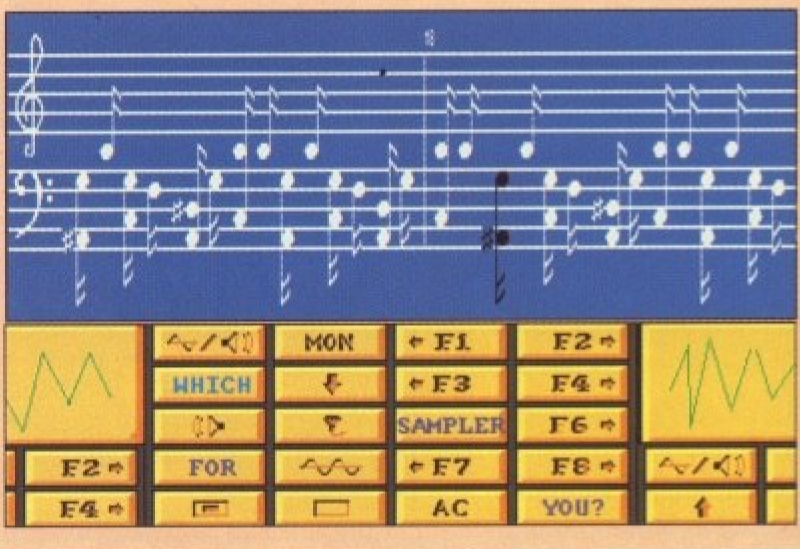
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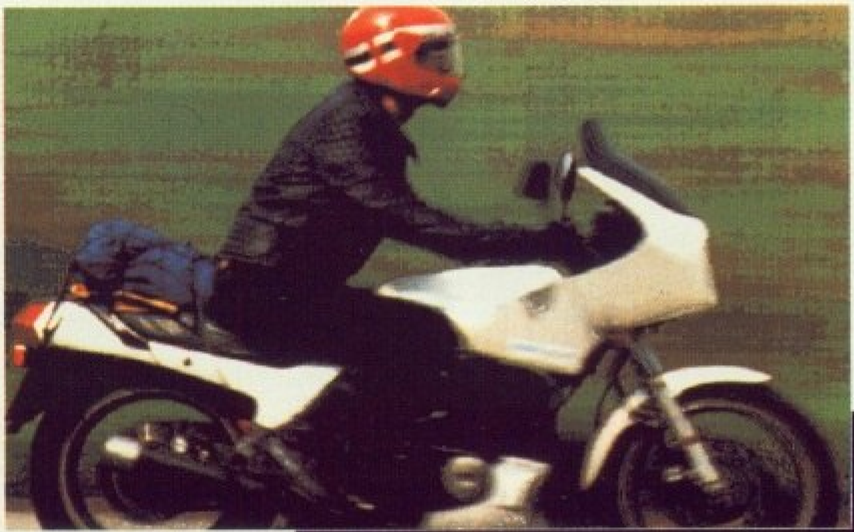
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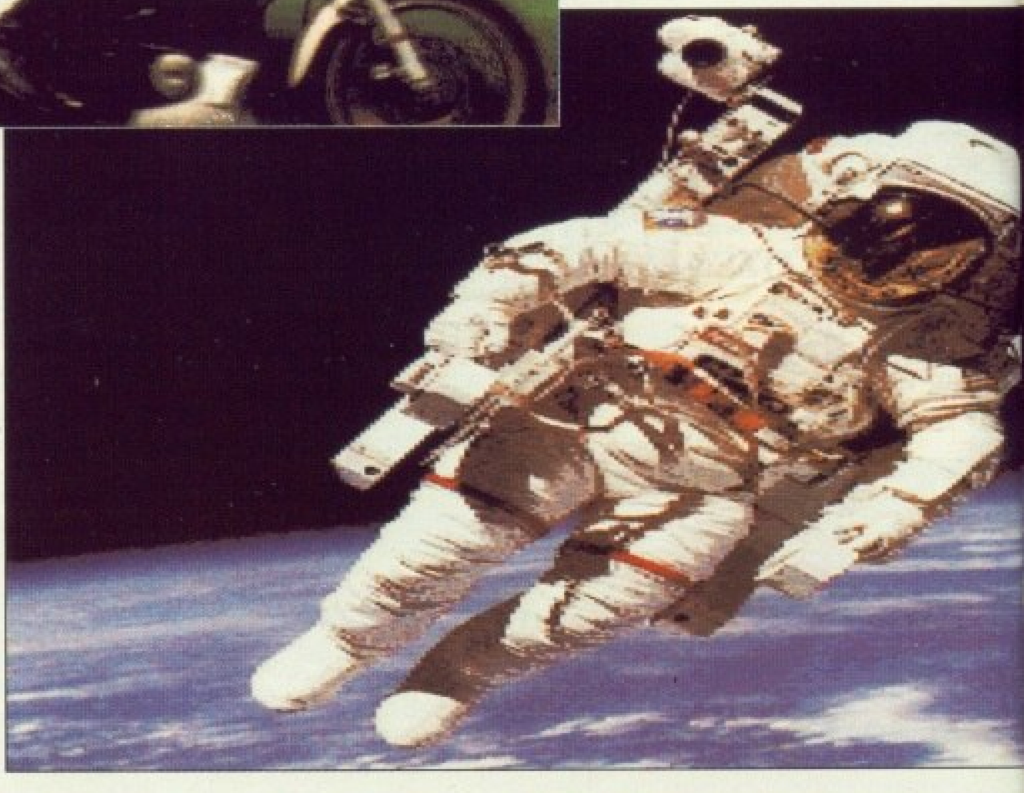
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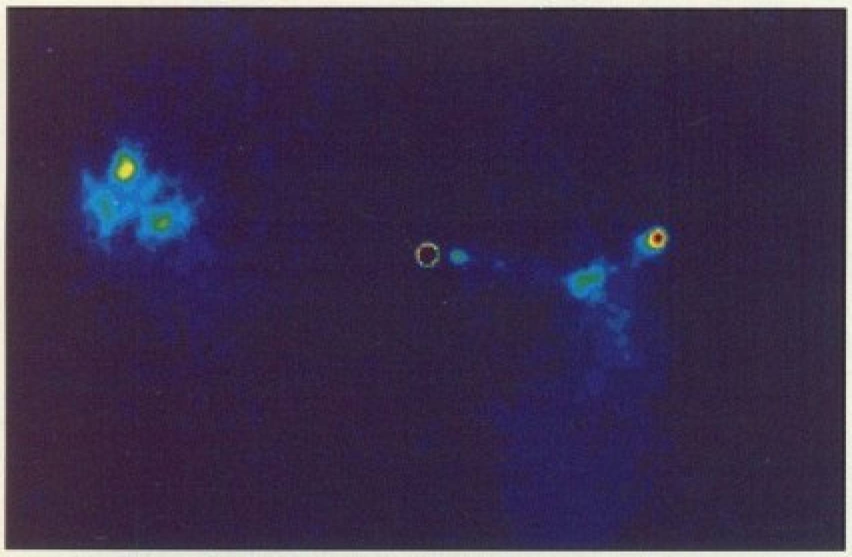
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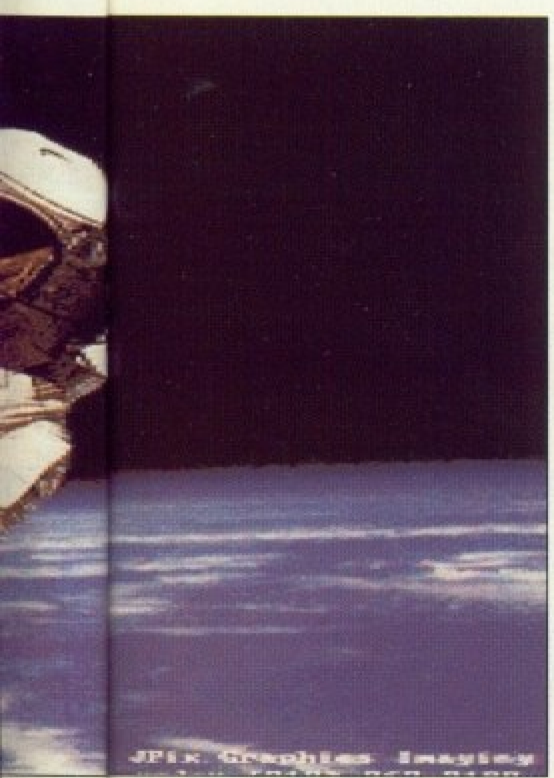




These images were created on an Amiga supporting 24 bitplane graphics. The technology to create your own full-colour magazine is now available



This is a quasar as seen by an Amiga based at Jodrell Bank, Cheshire





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CDTV launch delayed

AT the beginning of the Computer Entertainment Show in September the usual crowd of computer journos were invited to the usual Commodore breakfast press launch.

Commodore UK Supremo Steve Franklin took centre stage and proceeded to spill the beans on the current state of the CDTV or *Commodore Dynamic Total Vision.*

The Amiga-based CDrom machine was originally scheduled for a September launch, but rumours of delays have been circulation ever since its unveiling at the Consumer Electronics Show in Chicago. Inevitably there was air of expectancy as Franklin outlined his plans.

Commodore UK are initially releasing only about 1500 to 2000 CDTVs to selected developers, companies and members of the media in the next few weeks.

The plan is to let *them* to do the Beta testing and major bug finding. In exchange for their efforts, Commodore will give them a "generous discount" on the price.

The finished product should be available from "mid February" with more than 40 specially written pieces of software already available. Commodore are hoping to have sold around 350-500 thousand machines within a year. By this time they hope that over 140 titles will be available. These do not include straight conversions of existing Amiga games, rather unique CDrom-based items such as encyclopedias and interactive libraries.

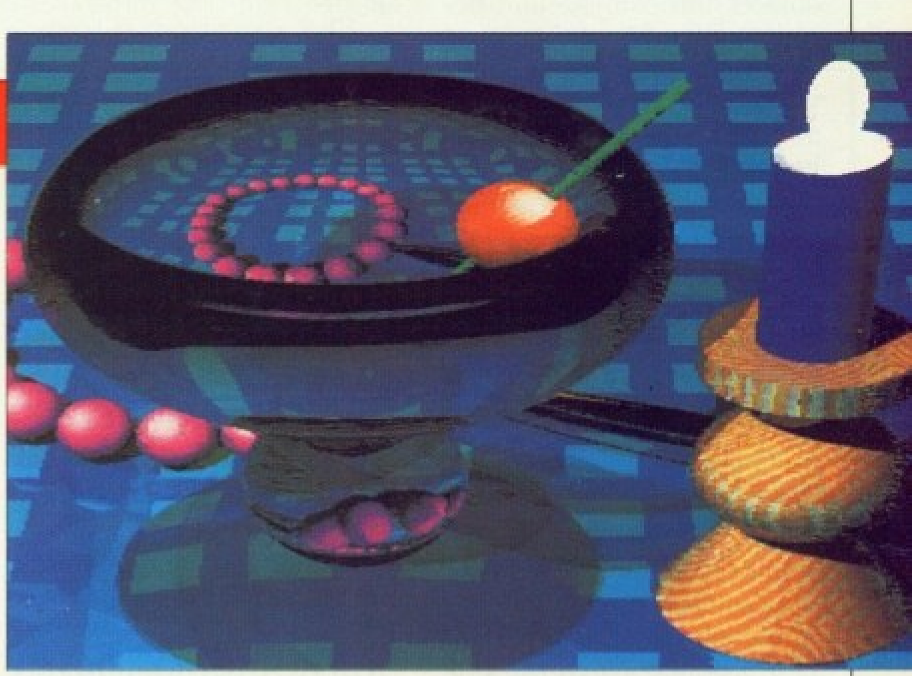
When asked if the CDrom drive would be made available for existing Amiga owners, Franklin said that it was a possibility, depending on demand.

In other words, if you want your Amiga to be able to support the new optical media, you'll have to write to Commodore and tell them.

The delay in the CDTV's launch may disrupt Commodore's plans to create their own standard for CDroms. The rival CDI system produced by Philips looked set to become the world standard, with only Commodore's plan to swamp the planet with machines using their system posing any threat.

Obviously, *Amiga Computing* are hoping to get their hands on a CDTV as soon as possible, although Commodore PR Andrew Ball said something rude when we told him we needed one more than anyone else.

Real design, real solutions



THE world of ray tracing has been quiet for too long. Sculpt once dominated but a failure to update the software left it commanding a stagnant market. Something had to change.

Now the world of ray tracing and indeed, graphics as a whole, is coming back to life. There has been no lack of commitment by users, as entries to this year's Amiga Centre Scotland animation competition has shown. What the world has been waiting for is a significant release. It got two.

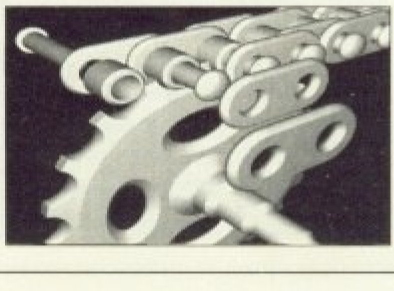
Last month we covered one of those releases, 3D Pro. The second emanates from a Finnish company with the unlikely name of Realsoft.

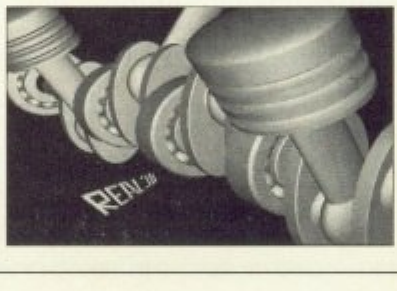
Called Real3D, it claims to be the "fastest ray tracing program with animation and solid modelling for Amiga users". From what we saw, this is no exaggeration. Rendering time has been reduced from a timeframe that could be measured in cups of tea (in the Sculpt era) to one measured in mere sips of tea.

What's more, the rendering time is more or less stable – that is, it is less dependant an the number of objects being rendered, with a large percentage increase in the number of objects, the render time in a particular mode is not increased excessively.

Another great saving in time will be made possible by rendering only a small window in the whole image. It will be possible to render a whole image at a very low resolution and then select just a small area of interest to be rendered in extreme detail.

For producing animations this has the obvious advantage that areas in which no change takes place do not need to be re-rendered.





But speed is not everything. It is the approach which matters most. With an engineer in the programming team, the result was bound to be a very CAD-biased product.

The inclusion of a wide base of primitives and the use of Boolean functions on these shapes enables the easy construction of engineering-style drawings.

Unlike Sculpt there will be no vertex editing. In Sculpt, objects were all made up of small facets or triangles. This meant the system was flexible to manipulating individual points on an object's surface, but also led to the dis- ➤

➤

tinctive angular effects which made Sculpt images instantly recognisable.

The effort here is realism above all else. A sphere has no points, it is a mathematical shape – that is the way in which all the objects are modelled.

Other features will include full colour texture-mapping and user definable materials.

These have three slider-determined properties – opacity, reflectance and "speed of light" (refractive index).

There will be many functions for the manipulation of 2D IFFs for use as backgrounds, textures and for a technique called "pixel-replace" where every pixel in the original bitmap is replaced by a particular primitive object.

Animation will not be neglected. With the inclusion of powerful features to rotate and move both objects and camera, and the ability to display a fast wireframe preview, the software has been seen to knock out fairly impressive anims in a matter of minutes.

The Sculpt syndrome



should not happen again – Realsoft seem to be fairly committed to producing upgrades, more so since this is a product which the programming time have spent their entire Amiga-lifetime bringing to fruition.

Already on the cards are a 24-bit colour version and routines for importing Sculpt files.

The 24-bit variant will be gratefully received by Amiga Centre Scotland, Real3D distributors in this country, as it may be ready in time for the launch of their own 24-bit board, sometime this year.

For details contact the Amiga Centre Scotland on 031 557 4242.

A1500 winner collects



JOHN Kemp, the winner of the Checkmate Systems A1500 announced in last month's issue, was – to put it mildly – chuffed to bits when Steve Jones handed over his prize.

"He nearly shook my arm off" said Steve, "He was really pleased." And so he should be, for Checkmate even fitted his A500 into the A1500 casing for him.

Those of us not lucky enough to win *Amiga Computing* competitions will be interested in the new products from Checkmate such as the new A590 expansion card which allows internal fitting of the Commodore hard drive.

For the user wishing to expand bit by bit, Checkmate will supply the keyboard casing only, for £60. More exciting things are coming, but Steve would say nothing except "They are very exciting!"

Socket to me

GOOD news for Amiga owners with more peripherals than connectors: Canadian company Prespect have released a solution to all your problems – the MFC MultiFaceCard. It slots into your A2000 or A3000 and provides another pair each of serial and parallel ports.

The supplied software makes full use of the Amiga's multitasking, so in theory you would be able to run six separate tasks, each having their own serial or parallel port.

Just what BBS owners have been waiting for, we suspect.

For more details, contact the European branch of Prespect in Germany on 89 354 4962.

A590 expansions

ALTHOUGH undeniably good value for money, the official Commodore A590 hard drive has been criticised for being both slow and a bit on the small side.

Almathera Systems have recognised this failing and offer quite an amazing service: For a reasonable fee they will replace the drive mechanism in your A590 with a newer, faster (sometimes up to five times faster) unit.

Just think: If you wanted you could have a 180Mb drive in your standard A590 casing, with no external cables or power supplies.

Prices start at about £315 for a 43Mb drive and rise to £585 for a huge 180Mb.

For more details call Almathera on 081 668 9605.

You CED it

SILICA Systems have taken on distribution on the ASDG range of products, including the rather brilliant Cygnus Ed Professional 2 text editor reviewed in the August issue.

CED2 now costs £59.95 (instead of £89.95) and for details on it – or any other ASDG products – you should contact Silica on 081 309 1111.

Joystick from down under

BASED on rugged arcade machine joysticks, one of the first offerings from new company Sold Gold Marketing (0389 55973) is Star Cursor, a heavy duty joystick which first saw life in Australia.

Stringent tests have shown that Star Cursor will stand up to 50 million operations without breaking down and its manufacturers say it will cope with normal use for five years without failing.

"It works through direct electrical contact instead of floating components which

Commodore goes a bundle

THE Amiga has been rebundled to cash in on the lucrative Christmas period spending spree.

The "Screen Gems" pack comes with *Days of Thunder, Back to the Future II, Shadow of the Beast II, Nightbreed* and the ever present *Deluxe Paint II*.

Commodore are expecting sales of around 130,000 units over the Christmas period – an exceptional number of machines.

A new educational pack called "First Steps" has also been announced, and is the first bundle to include a half meg memory expansion as standard – which is proof that the Amiga is growing well beyond its game console beginnings.

For the same reasons, Amiga peripherals are now being pushed as ideal Christmas pressies and will come bundled with various pieces of productivity software.

As an aside, to Commodore's embarrassment the C64 is still selling in phenomenal numbers.

In fact, this Christmas it is expected to sell more than last year, helped no doubt by the new 64 games console.

can easily break", said Tony Morris of SGM. "We have thrown it against the wall and still done it no damage. Unless someone actually takes it apart and puts it back together wrongly, it will continue working and comes with a three-year guarantee".

Star Cursor costs £29.95 plus £2 post and packing.

Conference on the line

MICROLINK, the computer-based communications service, now have a multi-user, real-time chat facility which includes many advanced features not available on other systems.

Called The Forum, this free service allows any number of subscribers to talk to each other but also offers private computer conversations with a facility for users to choose who they want to communicate with and exclude others.

Subscribers can set up a "room" off the main area of The Forum so that confidential conversations can take place between two or more people.

Once such a room is created, the user has the power to admit only the people wanted in the discussion. There are plans for MicroLink staff to be available at certain times and also for celebrities to make guest appearances in The Forum.

Also now on line is an improved version of WineLink with 84 different menu options including special beers, lagers, wines, brandies and port.

Subscribers can place orders at very competitive prices and can also send gift packs to friends in a presentation box with personal message.

Opting out

RUMOURS that WordPerfect 5.0 and 5.1 are to be made available for the Amiga have been denied. A spokesman for the company told Amiga Computing that while it will continue to support the Amiga with maintenance releases which may add new power features, there are no plans to develop Amiga versions of the latest upgrades.

Colours galore

AMIGA 2000 and 3000 owners will soon be able to display 16 million colour images on their machines with the new Harlequin Framebuffer from Amiga Centre Scotland (031-557 4242).

More than a year in developoment, this tasty offering should be available before the end of 1990, according to the latest word from ACS boss Martin Lowe.

Although he makes no promises he hopes Harlequin will have its first public showing at the Computer Graphics Show at Alexandra Palace during the first week in November. Pricing has yet to be fixed but Martin is aiming to bring it in under the £2,000 mark.

Harlequin features RGB analogue broadcast specification output, full 24 bits/pixel colour giving 16,777,216 colours, output interlace and non-interlace, full overscan in all modes and resolutions and is Genlockable in interlace mode.

Both PAL and NTSC versions are available with 32 bits/pixel design, software to load IFF, Sculpt, ScanLab, Digi-View and other files and programming interface supplied.

Harlequin comes in four configurations - a base model; base model with double buffering; base model with Alpha channel and base model with both double buffering and Alpha channel. Other options include CCIR 656 for 601 digital video, PAL encoder, Harlequin genlock, Amiga Genlock and single frame controller. The board is designed to 100 pin Zorro II specification for internal use in the Amiga 2000 and 3000 and ACS have no plans for either A500 or 1000 versions.

Harlequin can be used without additional hardware but since 24 bit image files are over 1Mb uncompressed, a hard disc is recommended.

Network newsflash

PAUL Fleetwood, a dealer for the Nine Tiles network reviewed in the October issue of *Amiga Computing*, has asked us to reiterate that the prices mentioned in the article were per card. Obviously this means that for a network of two machines, you'll need two cards.

The networks will also work best with Amigas which have at least 1Mb of ram.

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Moving into megabyte land



BACK in the old days, any amount of memory over 16k was more than you could possibly use and much more than you could possibly afford.

In these enlightened days of course, the Amiga user may be seriously looking at expanding his or her computer to the dizzy heights of several megabytes.

There are several ways of doing this on an A500, and the two major systems are from ICD and Cortex.

The ICD AdRAM unit fits into the trapdoor, and is available in the form of a 4Mb motherboard, a further 2Mb daughterboard and various steps in between. It's small, it's neat and you can get one from either Third Coast or Silica Systems.

The Cortex unit is an externally fitting, externally powered box which plugs into the side of the A500 and has a through connector to allow the A590 hard drive to be connected. It can be expanded in several steps to 8Mb. It's also small, also neat and you can get one from Cortex (051-236 0480).

Which is best? Well, you'll have to wait until next month to find out, for at this very moment the team are putting them both through their paces. Exciting, isn't it?

Besides ram expansions, ICD have been busy trying to speed things up. The AdSpeed processor accelerator is rather cunning: Instead of just using the most expensive member of the 680x0 family in place of the stock CPU, AdSpeed uses what at first might seem a rather tame 14.7 Mhz 68000.

The clever bit is the 32k of Static ram used to cache data and instructions, which will speed things to the extent that AdSpeed can run faster than some 68020 cards. The use of a 68000 also means that software compatibility is as good as it can be. Looks nice.

New HAM package



AEGIS SpectraColor comes from those nice people who brought us Photon Paint, and is the first HAM package to support full DeluxePaint style Brush Animation.

For those not in the know, "Hold and Modify" is a special Amiga graphics mode which allows 4,096 colours to be displayed onscreen at the same time. The only drawback with it is fair whack of the available processor time it uses, making animation – at best – difficult.

Looking through the specifications, SpectraColor looks as though it will become the new standard by which all future art packages will be judged, for not only does it support brush anims, but it comes with a full set of image tools which will do everything from 3D extrusions to shadow directions.

US sales slump, Europe's boom

THE grass may be greener on the other side of the fence but this is certainly not the case on the other side of the Atlantic if Commodore International's latest figures are anything to go by.

Profits dropped from $51.3 million last year to a mere $1.5 million for the year ending June 30, 1990 although total sales were only down from $939.7 million to $887.3 million.

Meanwhile, Commodore UK have preceeded the release of their official figures with an announcement that their turnover for that period rose to £75 million from the previous year's figure of £43 million. Sales in France, Italy, Denmark and Holland are also said to have risen.

Commodore International say their massive drop in profits is due to three factors – adverse exchange rates, rising costs and a six per cent drop in sales as emphasis was moved from the C64 to the higher-margin Amiga.

Following this move, Amiga sales are said to have shown a 40 per cent increase in the last quarter with total sales up 10 per cent in the same period.

In the UK, Commodore claim to have an installead Amiga base of more than 345,000 machines and predict that they will hit the half million mark by the end of the year.

"Commodore's sales growth in the UK and our other European markets shows the strength of our product range", said UK managing director Steve Franklin.

Despite this, the UK operation has seen a number of recent departures including financial director Mike McGeehan, members of the marketing staff and business systems products manager Jennifer Perry.

Teaching technology

COMPUTERS are valuable in giving physically handicapped people or those with learning difficulties a better standard of life. E.A.S.T. (Education And Social work Training) now helps the disabled, their carers and teachers to get more out of new technology.

E.A.S.T. staff undertake training courses throughout Scotland and the UK. Through these courses and consultancy, they also aim to help shape future policies on IT training for the disabled.

They have extensive experience in the use of computers in a variety of settings and have detailed technical skills at their disposal. Staff are also very experienced in putting their knowledge across whether to people who are complete beginners in computers or those who are more experienced.

Courses include Computers for Beginners, Adult Basic Education, Switch Control, Remedial Education, Communication and Evaluation. They are held for individuals or groups. More details can be obtained from E.A.S.T. on 031-669 3916.

Taking on the tutors

EDUCATIONAL software house Kosmos (05255 3942) hve now released Amiga versions of all of their most popular titles.

Four foreign language programs lead the new releases. They are The French Mistress, The German Master, The Spanish Tutor and The Italian Tutor. They are aimed at language students from beginners to GCSE level and above.

The programs include large ready-made vocabularies of foreign and english words covering nouns, adjectives, adverbs, conjunctijons, prepositions, phrases and verbs conjugated in six tenses.

Students can choose from a wide range of learning and test modes and can also create their own lessons for homework or revision.

For ease of use, vocabulary is arranged under 32 separate heading such as the family, the dwelling, vehicles and food and drink and cover 2,500 words. Price, £19.95.

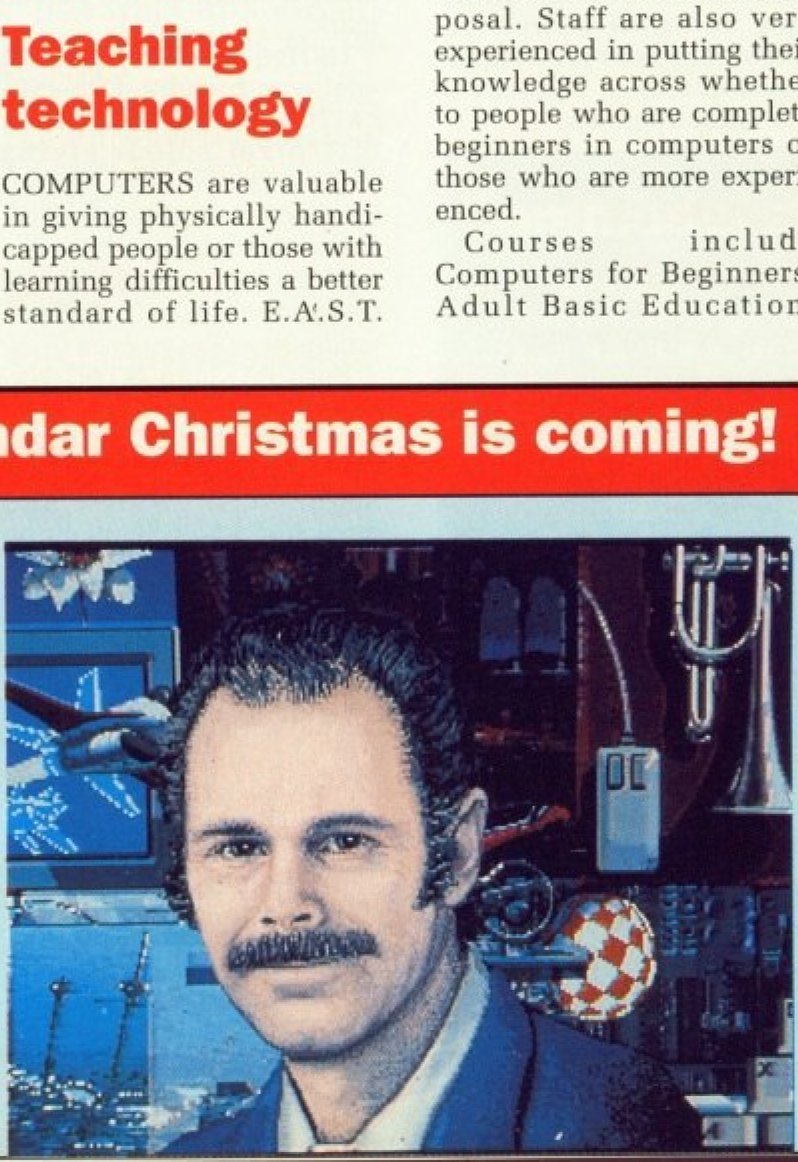
Also just released by ➤

Amiga calendar Christmas is coming!

LOOKING for the perfect gift for an Amiga-using loved one? How about the 1991 Jim Sachs Collection Calendar.

Each month features a classic image from this renowned Amiga artist, along with helpful hints and background information.

Sounds wonderful. If you think so too, get in touch with Oxxi Inc.



Kosmos are two educational quiz programs called Answer Back Junior Quiz and Answer Back Senior Quiz. Including large databases of general knowledge, each program contains 750 questions spread over 15 topics.

For the six to 11 year-olds, topics cover such subjects as nature, music, word fun, sums and spelling. The 11 and over topics include history, geography, astronomy, inventions and sport.

Answer Back programs cost £19.95 and are backed by supplementary quiz files, Factfile 500, at £9.95 each.

Is there a doctor in the house?

THAT well-known producer of music software, Dr T, is moving house. The new address – still in the US we're afraid – is Suite 1B, 100 Crescent Road, Needham, MA 02192, telephone 617 455 1454.

That's where to go if you want to hassle them about any of their products, including the intelligent music system "M" and the forthcoming SMPTE synchroniser *Phantom*. The SMPTE device is especially interesting, as it will interface with software such as the imminent *Showmaker* from Gold Disk.

Faster by Fourier

HERE"S something which *real* programmers may find useful – A full mathematical library written in C.

If you have need to make use of Fast Fourier Transforms, matrix operations or statistical analysis in your programs but have no desire to re-invent the mathematical wheel, the NAG C Library could be the unique solution to your univariate estimations. (Or, in English, a Good Thing.)

Map on to their set by calling 0865 511245.

Big names line up for THE show

THE Computer Shopper Show - the event which smashed all previous records for pre-Christmas computer exhibitions in 1989 - is all set to retain its title of the UK's largest Amiga event when it opens at Wembley Conference Centre on December 6.

Leading suppliers in the Commodore Amiga world will be on hand with more than 100 of the 280 stands offering Amiga related products to ensure that Shopper lives up to its reputation as the ultimate one-stop shopping venue for both hardware and software Christmas bargains.

Household names in the Amiga market who have already committed to the show include Anco Software, CDS Software, Database/Mandarin Software, Delta Leisure, Digita International, Dowling Computers, Evesham Micros, Hi Soft, GFA Data Media, Impressions, Mindscape, Ocean, Real Things, Rombo, US Action and Virgin Mastertronic.

The 1990 event will also feature a major advice centre from where experts, including leading Amiga exponents, will dispense free unbiased guidance to visitors seeking to acquire the most relevant software, hardware or peripherals to suite their needs.

Organised by Blenheim Database Exhibitions and sponsored by Computer Shopper magazine, the show runs from December 6 to 9.

The move to Wembley from its original venue of Alexandra Palace and the addition of an extra day follow the unprecendented success of last year's inaugural event.

It attracted a total of 26,658 visitors, a figure verified by the Exhibition Audience Audits Company and featured special offers estimated to be worth in excess of £1,000,000. Up to 40,000 visitors are expected at this year's show.

Computer Shopper will also be used to raise money for the Starlight Foundation, the charity set up to help seriously ill children.

It is open on Thursday and Friday, December 6 and 7 from 10am to 6pm; on Saturday, December 8 from 9am to 6pm and on Sunday, December 9 from 10am to 5pm.

Admission is £5 for adults, £3.50 for children under 16 with £1 off advance tickets. A pre-paid family ticket covering two adults and two children is available for £12. Ticket hot line for credit card bookings is 051-357 1736.

Time for a green re-ink

THERE are two things you should think of every time you throw away a printer ribbon. The first is that you are not throwing it away because it is worn out, merely because it has run out of ink.

The second is that consequently you are wasting energy, resources and being a bit unfriendly towards mother nature.

The first of these problems has been solved before. Re-ink your ribbon. The fabric is good for several complete re-inks depending on your printer and exactly what you use it for. Needless to say that compared to the price of a new ribbon a bottle of re-inking fluid is virtually free.

Unfortunately, up until now the re-inking fluid on the market has been manufactured into ozone-depleting aerosols. This is a Bad Thing.

But now help is at hand.



Re-Ink's creator Simon Caspell

The new product goes by the catchy and imaginative name of "RE-INK" and employs a pump action process to deliver the ink to where it is needed.

A can of this wonder potion can bring back to life more than 30 ribbons, leaving them looking as good as new and depriving the local land-fill site of a few miles of perfectly servicable ribbon fabric.

To find out more, or just to congratulate these fellows, contact Office 21 on 0202 669777

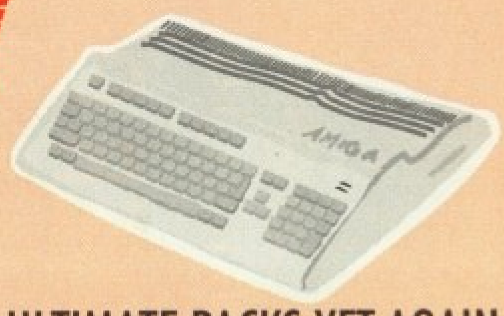


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Just look at what you get...



- ☆ AMIGA A500 COMPUTER (See standard features list at bottom of this page)
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- ☆ AND...DELUXE PAINT II

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RAPHAEL'S PACK PRICED AT AN INCREDIBLE...

£399*

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PHILIPS CM 8833 STEREO COLOUR MONITOR

Stereo High Resolution Colour Monitor

- ❑ SCART Euro-connector fitted as standard
- ❑ RGB/AI, TTL, Comp. Video & stereo audio inputs
- ❑ Can also be used as a TV with tuner or VCR
- ❑ Features fold down tilt-stand ❑ Twin Speakers
- ❑ FREE lead for computer of your choice
- ❑ FREE 12 Month on site service warranty.

£249*

COMMODORE 1084S STEREO COLOUR MONITOR

Stereo High Res. Colour Monitor

- ❑ RGB/AI/TTL, Comp. Video/Audio Inputs
- ❑ Can be used as TV with a tuner or VCR
- ❑ Twin Speakers for stereo output
- ❑ Supplied with cables for A500, CGA PC, C16-64-128

£259*

All Monitors are supplied with a Free Tailored Dust Cover!

Amiga STORAGE



COMMODORE A590 20Mb HARD DISK DRIVE FOR AMIGA A500...WITH FREE 1Mb MEMORY-UPGRADE

Commodore's own hard drive for the A500

- ❑ Autoboot with Kickstart 1.3
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The fantastic Amiga and ALL THE EXTRA'S detailed in Raphael's Powerplay Pack 1 above, AND then you also get...

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Twin Stereo Speakers, Green Screen Switch, Lead to Amiga, Free Tailored Dust Cover and 12 Months on-site warranty (See monitor panel for details)

A SPECIAL PACK FROM LEONARDO TO LET YOU SEE THOSE GAMES WITH SUPERB CLARITY AND IN FANTASTIC STEREO FOR ONLY...

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NOW WITH BRAND NEW FASTER STAR LC200 COLOUR PRINTER

PACK 3 COMES TO YOU FROM DONATELLO AND INCLUDES THE FOLLOWING...

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THE BRILLIANT PHILIPS CM 8833 STEREO COLOUR MONITOR

With FREE Dust Cover and Cable to your Amiga and including a 12 Months on-site warranty (See monitor panel for details)

AND

THE BRAND NEW STAR LC200 COLOUR PRINTER...

150/40 cps, Full Colour 9 Pin NLQ Dot Matrix Printer with FREE Dust Cover and cable to your Amiga (See printers on page 3 for further details)

(Or choose an alternative from our range & adjust by the difference in price)

A SPECIAL MONITOR AND PRINTER PACKAGE FROM DONATELLO TO SET YOU UP COMPLETELY AND ALL AT A PRICE THAT'S GOT REAL TURTLE POWER...

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- PUBLISHERS CHOICE (DTP inc. Kindwords)
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- DR. T's MIDI RECORDING STUDIO
- BBC BASIC EMULATOR
- MAXIPLAN 500 SPREADSHEET
- SUPERBASE PERSONAL DATABASE
- AMIGA LOGO ☆ F18 INTERCEPTOR
- FULLY MICROSWITCHED JOYSTICK
- TEN BLANK 3.5" DISKS & DISK WALLET
- PLUS...TEN GREAT GAMES
  Datastorm, Dungeon Quest, E-Motion, Grand Monster Slam, RVF Honda, Drivin Force, Pipemania, Rock 'N' Roll, Skweek, Towers of Babel,

BUILD YOUR OWN PACK... PACK 5-As above with CM8833 £779
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+

PHILIPS CM 8833 STEREO COLOUR MONITOR

+

NEW STAR LC200 9 PIN NLQ FULL COLOUR PRINTER

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+ **A WHOLE HOST OF BUSINESS SOFTWARE AND QUALITY ACCESSORIES...**

- PROTEXT V 4.2 (W/Proc.)
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- DELUXE PAINT II
- DAYS OF THUNDER
- BACK TO THE FUTURE II
- SHADOW OF THE BEAST II
- NIGHT BREED
- MICROSWITCHED JOYSTICK
- 10 BLANK 3.5" DISKS
- DISK LIBRARY CASE
- MOUSE MAT
- 3 DUST COVERS

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...AND ALL PRICES INCLUDE VAT AND STANDARD POSTAL DELIVERY SERVICE

IMPORTANT NOTICE
'TEENAGE MUTANT HERO TURTLES'
IMPORTANT NOTICE

Mirrorsoft's official UK Software Licence, 'Teenage Mutant Hero Turtles' is scheduled for release during Nov. '90. Orders despatched before this release will have the software forwarded the moment it is available.

'Teenage Mutant Hero Turtles' software title - UK Copyright of Mirrorsoft.

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All the characters Per Second speeds quoted below are Draft/LQ at 10cpi

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All the new printers in the LC200 range have the following features...

- 80 Column Dot Matrix
- Push and Pull Tractor Feeds
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- Programmable from frontpanel, no dip switches
- Micro paper feed
- Reverse paper feed
- Paper park with Auto Single Sheet Paper Loading
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STAR LC200 GREAT NEW COLOUR PRINTER - 185/40 cps — £209.95
This is the one in our packs!

- 240 dpi - 9 Pin COLOUR
- Massive 16K Buffer
- 8 Resident Fonts
- Front Panel Pitch Selection
- Max. paper width 11.7"
- Supplied with colour & mono ribbons
- Faster than the old LC10 Colour but still at the same competitive price

STAR LC24-200 NEW 24 PIN MONO PRINTER - 220/55 cps — £259.95
New Star 24 pin that means business!

- 360 dpi - 24 Pin MONO
- 7K Buffer expandable to 39K
- 10 Resident Fonts
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- Max. paper width 11.7"
- Supplied with mono ribbon
- Faster than the old LC24-10
- Extra font cartridges available

STAR LC24-200 NEW COLOUR PRINTER - 220/55 cps — £299.95
Colour version of the new LC24-200 Mono

- 360 dpi - 24 Pin COLOUR
- 30K Buffer expandable to 62K
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- Front Panel Pitch Selection
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- Supplied with colour & mono ribbons
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Our most popular Mono Dot-Matrix printer and at a super low price

- Multiple font options easily accessible from front panel
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Best quality full colour printer at a realistic price

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- For presentation graphics, CAD and technical/scientific applications
- Full page colour of graphics on paper in 4 minutes (typical)
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24 Pin Colour Printer

- Push and pull tractor built-in with bottom
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Combined stereo sampler and midi interface. Samples in Mono or Stereo.

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Gordon Harwood Computers offer facilities to purchase using our budget account scheme. APR 36.8% (Variable). Available to most adults of eighteen years or over, subject to status. Simply phone or write and we will send you written details along with an application form. Applications, required in advance, available to full time U.K. mainland residents and overseas British forces personnel. Written quotations available on request.

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- Full page colour of graphics on paper in 4 minutes (typical)
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24 Pin Colour Printer
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New super high spec 9Pin colour printer
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Very reliable low cost printer (please specify interface on order)
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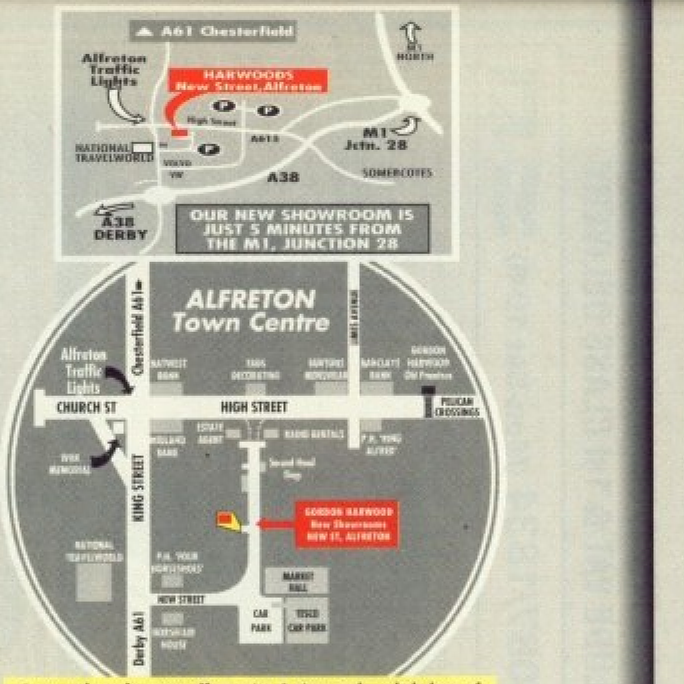
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Ezra



2 Unkind

I HAVE just read the "Word Processing – Part 2" article in the September issue of *Amiga Computing* and was very surprised to find a review of KindWords 2 not included.

In the review of Scribble the article says "....the inclusion of a thesaurus. No similarly priced word processor has this facility." Wrong!

Kindwords has a 470,000 synonym English thesaurus, likewise a 100,000 word English dictionary, and apart from the fact you cannot have multiple files open, a facility I have not yet missed, I rate Kindwords better than Transcript or Scribble!

It is very easy to use. Although it does not use Amiga fonts it does come with 11 of its own including Greek (what use is that?) and a very wide set of printer drivers (including Superfonts to produce remarkable results on even a cheap 9 pin dot matrix printer). All in all lots of facilities on a three disk set with a nice manual.

I think the fact the Kindwords was not included was a serious omission to an otherwise excellent article or has the *Amiga Computing* team got something against Kindwords?

David Sellwood,
Warrington,
Cheshire.

No, we don't have anything against Kindwords. The reason we didn't include it in the word processing feature with the rest of the packages was because we didn't have a copy.

I know what you're thinking, pretty poor load of hacks that can't even be bothered to get hold of a few disks of software to review. Wrong.

We go out of our way to make sure every single feature in this magazine is extensively researched before you read it. The lack of information is just as serious as misinforming our readers.

There is nothing we would have liked more than to include the package you mentioned. We attempted to obtain one through the distributors in this country. We called them up and they weren't available, we faxed them several times and got no reply.

As I said ,we go out of our way, but there is a point at which that has got to stop. Short of buying the package in question there was no way it could be included.

So the answer to your question is that we wanted to review it, but the distributors didn't want us to. That's what happens in this business when you have a reputation for telling the truth.

I cannot comment on your opinions of Kindwords, becquse I've never seen it. The guys that put together that feature could have written a couple of hundred words on Kindwords from press releases and adverts, but unlike many other publications. We treat manufacturers' specifications with a good deal of healthy suspicion – I'm sure that's the way most of you prefer it.

Sense and sensibility

I BOUGHT our Amiga in June, I had a tape Amstrad before,and I'm really pleased with my choice. Since we bought it, my husband has got a half meg ram upgrade, a second disk drive, a stereo colour monitor (the music from Amiga is fantastic) and a 24 pin colour printer.

My daughter uses the printer when she runs DeluxePaint II and has become really good processing quickly from white sheep with red wellies on.

My son on the other hand seems to be great at mastering arcade games. I've got Home Accounts and have transferred all my accounts on to the disk and Kindwords which you have not featured in your article on wordprocessing.

It keeps saying that there are no spelling mistakes in the text even though I know I'm a lousey speller.

My husband likes to play Battle Chess because of the great effects and seeing what Workbench can do.

Myself, I love adventures though my mind doesn't seem as logical as the programmers! Anyway enough of us, you wanted some cut price projects. I'm going to try making

➤

Tough assignment

I HAVE been trying to install programs on my A590 hard drive (thanks to Diamond!) but when I click on the icon on some software – for example Kindwords and DeluxePrint – it asks for the disk which the program was copied from.

I am not experienced with CLI, but I have been able to use it to copy the programs to the hard drive. The assign command explained in the A590 manual does not seem to work. Am I doing something wrong?

Could you please give me a by-the-letter description of what to do. Hopefully this will help somebody else in the same situation.

Lets see some more mug shots of the team!

Colin Morrison,
Lisnaskea,
Fermanagh,
Northen Ireland.

More mug shots? Are you mad? Circulation hasn't recovered since the last lot went in. Let's face it, Aj and Green are ugly. In fact, the only handsome chap is me, and they can't afford my fees.

OK. The problem with some programs is that they always look for files on the original disk. To counteract this you must create a logical device on your hard disk with exactly the same name as the original disk.

For example, supposing you had bought the wordprocessor Ezraword form Ezrasoft. The disk would probably be called "EzraProg". Make a directory on your hard disk called Ezra. Then add the following line to your startup-sequence:

```
assign Ezraprog: dh0:Ezra
```

If you don't want to clog up your startup-sequence you can always type it in each time.

Presenting PROTEXT 5.0

Five years to the month after Protext version 1 was launched Arnor are pleased to present version 5, an enormous leap forward in both ease of use and performance.

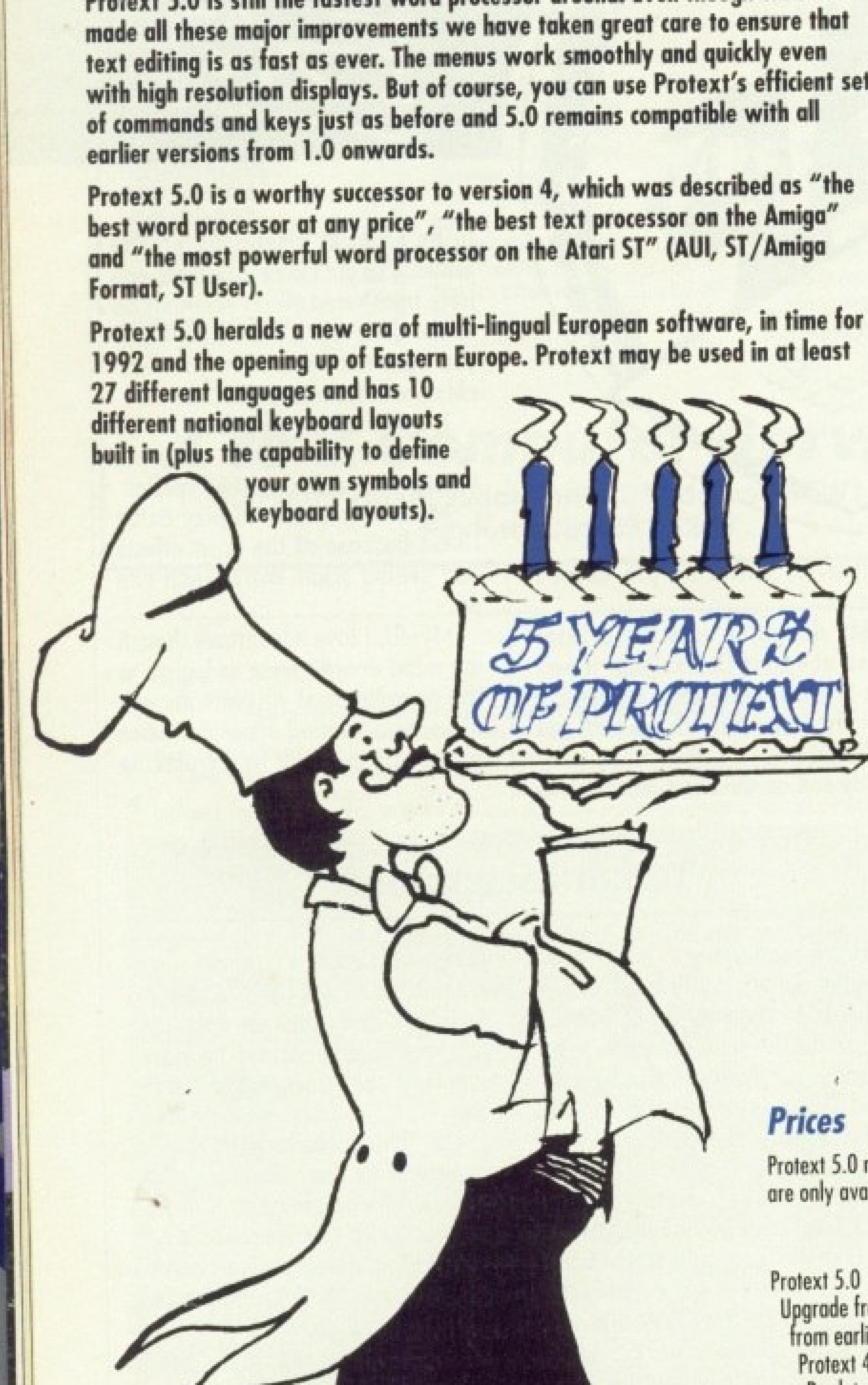
Protext 5.0 introduces a completely integrated system of pull down menus and dialogue boxes. The menus are among the many operations that may now be carried out with either the mouse or the keyboard. Protext really does give you the best of both worlds.

Protext 5.0 handles printer fonts flexibly and accurately. You can make full use of any number of proportional printer fonts, mix them freely within any line, centre them in headers, use automatically formatted footnotes. And Protext correctly formats your text as you type it, no matter how many font changes you use, showing you line and page breaks exactly as they will be printed.

Protext 5.0 is still the fastest word processor around. Even though we have made all these major improvements we have taken great care to ensure that text editing is as fast as ever. The menus work smoothly and quickly even with high resolution displays. But of course, you can use Protext's efficient set of commands and keys just as before and 5.0 remains compatible with all earlier versions from 1.0 onwards.

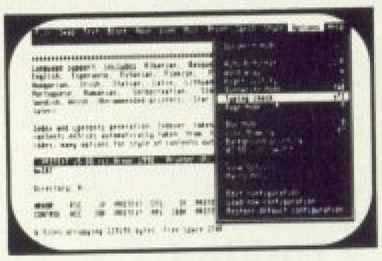
Protext 5.0 is a worthy successor to version 4, which was described as "the best word processor at any price", "the best text processor on the Amiga" and "the most powerful word processor on the Atari ST" (AUI, ST/Amiga Format, ST User).

Protext 5.0 heralds a new era of multi-lingual European software, in time for 1992 and the opening up of Eastern Europe. Protext may be used in at least 27 different languages and has 10 different national keyboard layouts built in (plus the capability to define your own symbols and keyboard layouts).



The Features

- **New fast & easy to use pull down menu system** with dialogue boxes and alerts; file selector; mouse dragging to set blocks. Menus complement existing commands and keyboard shortcuts, do not replace them. Menus may be used with mouse or keyboard. Amiga version follows Intuition guidelines.



- **Enhanced printing capabilities** supports multiple proportional fonts; mixing of different font sizes on the same line; proportional formatting whilst editing; side margin, headers and footers independent of main text font. Tabs, decimal tabs and centre tabs. Extensive range of printer drivers supplied.
- **Multiple file editing** - up to 36 files may be open; split screen editing.
- **Graphics mode support** on PC allows use in virtually any text or graphics mode including 132 column or 75 line VGA modes; user defined characters and on-screen bold, italics and underlining now on all versions; use of 13 different accents on any character.
- **Language support includes** Albanian, Basque, Czech, Danish, Dutch, English, Esperanto, Estonian, Flemish, Finnish, French, German, Hungarian, Irish, Italian, Latin, Lithuanian, Norwegian, Polish, Portuguese, Rumanian, Serbocroatian, Slovak, Spanish, Slovene, Swedish, Welsh. (Note: some printers do not support all languages).
- **Index and contents** generation. Indexer takes marked words or phrases; contents entries automatically taken from titles wrapped in control codes; many options for style of contents output.
- **Spelling checker** features completely new 110,000+ word Collins dictionary with very fast phonetic lookup. Anagrams and find word pattern. Foreign language dictionaries (German, Swedish available now, others to follow).
- **Many other enhancements** including multi-line footnotes and endnotes; automatic timed save; add column or row of figures; indent tabs; find word at cursor; 40 column mode support; sentence operations; inter- paragraph space; much improved expression evaluator; self incrementing variables; Roman numerals; newspaper-style column printing; file sorting utility with special options for names and addresses; revised manual plus new tutorial guide.
- **And don't forget Protext still includes** background printing; box manipulation; macro recording; exec files; headers and footers; find and replace; mail merging; undelete; file conversion utility; configuration program; auto reformatting; on screen help; time and date; typewriter mode; line drawing; disc utilities.

Prices

Protext 5.0 may be purchased from any good computer shop or directly from Arnor. Upgrades from earlier versions are only available from Arnor and the original discs should be returned with your order.

	PC	Amiga	ST/TT	Archimedes
Protext 5.0	£149.95	£149.95	£149.95	£149.95
Upgrade from v4.2	£60	£60	£60	N/A
from earlier versions	£75	£75	£75	N/A
Protext 4.2	£99.95	£99.95	£99.95	N/A
Prodata 1.1	£79.95	£79.95	£79.95	due 1991 Q1

Notes:

Protext 5.0 requires at least 640K of memory on all machines
Protext 4.2 requires at least 512K of memory on all machines
Prodata requires 1MB of memory on the Amiga

ARNOR

Arnor Ltd (AMC), 611 Lincoln Road, Peterborough, PE1 3HA. Tel: 0733 68909 (24 hr), Fax: 0733 67299

the computer stand, as detailed in September's issue.

Well anyway I haven't any room on top of our bench, just enough for the computer and gadgets. On either side I have drawers. The boxes that the disks come in can be taped together at an angle to allow the drawer to be shut.

If you are not too fussy you can convert an old shoe box. Cut it in half lengthwise and slide the sides in together until a disk fits, then tape or glue together. Get a piece of corrugated paper to fit inside the bottom of the box with the grooves uppermost running across the box. It's handy for blank disks or large amounts of disks.

This is my idea for a mouse mat, as I haven't any room to move a mouse on our bench – use your top drawer. Cut stiff cord or hardboard to be able to just rest on the sides of the drawer and about thre–quarters of the drawer's length (so you can lift it up to get at the contents).

Cover it with Fablon green felt and that's it! You can leave the mat in the drawer and close it – but don't forget to take the poor mouse out first!

I have your free disk with *Make money* fruit machine on. We loved to play it, but one day the screen flashed and the icon disappeared. How can I get it back?

Then there's the latest disk game, *Grey Slayer*.I've tried three times to load it from your instructions with no luck. After the words "press left button to continue" I get "unknown mouse command". Help!

When I bought our computer I bought all the Amiga computer mags I could get, especially ones with disks. They are OK but after the novelty is wearing off your magazine seem to have more interesting articles in a more readable form.

My special favourite is the letters page, as it seems to answer a lot of my questions and I see other people have the same queries.

Also you seem to treat the writers with respect. Some other mags seem to use the reply to slang off the writers.

Patricia Griffin,
Chester-le-Street,
Durham .

Thanks for the tips. I used to use an old lino tile as a mouse mat – it was great and a lot bigger than any you can buy.

What do you mean the novelty of the disks is wearing off? Don't let Jeff hear you say that or he'll send his beard to visit.

I think your missing Make Money is just a case of a wandering icon. Look in all the drawers. It's probably hiding.

The perfect word processor

I AM writing to you for advice because you have offered me much assistance in the past and there is a desperate shortage of people who are *au fait* with the Amiga in Basingstoke to whom I can turn for help.

I have been following the excellent feature on word processing and desktop publishing in *Amiga Computing*, and I would like to purchase a software package which will meet all my needs without being too far beyond my budget.

I should first of all like to know if I am the only person on the face of this planet who is not enchanted with Kindwords. I find it very claustrophobic to use, in the sense that it is very slow and does not always execute the commands I give it. For instance, while I type, entire passages of text disappear, only to return a few minutes later.

I always have to press Return, Space, and Delete twice in order for them to work. On occasions, strange messages and symbols appear in the text, and I have to spend time deleting them, which causes me much frustration. I often find using this program so tedious that I turn to QED instead of Kindwords.

It is for this reason that I am considering buying a WP/DTP package in the near future. However, with so much to choose from, I am not sure which way to turn. Perhaps, if I give you my specifications, you may be able to help me in my decision:

- I am an RSA 3 standard typist with a maximum speed of 75 words a minute on a typewriter and 95 wpm on a computer keyboard. I am therefore going to want a package which is not going to have a long delay period between the time my fingers hit the keys and the point at which the characters appear on the screen.
- I am likely to be using the package a great deal, so I am going to want a program which is aesthetically pleasing, if I am going to be staring at the screen for long periods at a time. .
- I would like to have to use the mouse as little as possible, as to take hands off the keyboard wastes time and is very annoying.
- I'd prefer the program to have graphics handling capabilities, as I often need to import illustrations into the main body of my text, though "flow around" is not essential.
- As well as bold, italic, and underline, justified right margin and wysiwyg would be essential features, and a wordcount facility would certainly make life easier.
- A spell-checker would probably remain redundant, becoz my speling is purfekt, but a thesaurus would dispense with the need for a paper one taking up room on the desk.

I took my RSA 2 word processing exam on an Amstrad using Wordstar, which is a practical, if not cosmetically pleasing, program.

Well, faced with this information, could you advise me which package would be most suitable? I quite like the sound of Pen Pal, but would its speed deficiency hamper me too much? I hope you will be able to come to my rescue once again.

Katharina Spencer,
Basingstoke,
Hampshire.

Hi, Katharina. It's always nice to hear from you. Unfortunately, the kind of package you describe does not exist yet, although several get close. Looking through the word processing feature in the August/September issues will be a close as you get to a thorough description of each package.

For speed, you would be had pressed to beat Protext. Unfortunately it has no graphics. For laying out pages, you really need a DTP package. Unfortunately, they are slow.

I hate to admit it, but I'm stumped. What you really need to do is find a dealer who will let you play around with as many packages as possible.

But you'll have to admit it: You're asking for a perfect piece of software, something which even I, Ezra, have never seen. (OK, then, apart from 3D Monster Maze.)

Waffle waffle complain gripe!

I'VE just wandered back from the Norwich with a copy of Beast 2, hoping it is a good game (haven't played it yet: Games, as always, are low on my priority list). While wandering home (if you can wander anywhere on an FZ1000) I was thinking about reviews and when they come out.

Why can a game like Beast 2 not be reviewed, or even extensively previewed,and yet suddenly appear in the shops. I would have expected large previews in the Amiga magazines if it was so nearly completed, or even the now famous Exclusive Review!

The above point is made more curious by a game called Supremacy from Virgin. A computer mag reviewed this game and I must say I was very interested. Is this bit of software for sale? Not on your nellies, Mr Wulf.

Why do magazines insist on taking the software company's word for it? I would have thought that because of past experience of the computer industry, magazines would be a little more sceptical of release dates and "final copies" of software.

I am not blaming all magazines, *Amiga Computing* is certainly blameless on this count, EFT-POTRM, RES 101 and Damocles were all reviewed approximately a month after everyone else, but at about the same time as they appeared in the shops. Ah bliss. That's the way it should be.

The search for the exclusive should not be priority number one, especially if it doesn't arrive for months. And yes, as you've probably guessed, I do remember Street Hawk!

Kevin Hall,
CIX .

Games reviews are an interesting subject. It depends a great deal on the software houses. Sometimes they send someone (usually a pretty young woman) to show us a preview. Sometimes they ask us to review this preview. We refrain from doing so, and instead we write a story for the Amiga Arcade section and mention the release dates. As to the time after a game

HELP FILE

Chips with everything

(I WILL soon be getting a memory expansion for my A500 and would like some information.

1. Could you please tell me what is the new "Chipmem Option" that is being offered on some of the newer memory expansions and will there be any soldering needed to use it.

2. Could you also tell me how I can tell if my 1.3 Amiga has the new fatter Agnuschip, as I have read that newer 1.3s have it fitted. My kickstart version is 34.5. Do I have a fatter Agnus?

K. L. Pattison,
Rusholme,
Manchester.

These two questions are related, so I'd like to answer them backwards if you don't mind. First of all the fatter Agnus is present in ECS (Enhanced Chip Set) machines. Run Checkagnus or a similar program to determine if you have it. Alternatively lift the lid and check the version number (if it is greater than 8371 then you have ECS).

The ECS will give you, among other things, the ability to use one meg of chip memory. Chip memory is the one that can be directly addressed by the DMA channels of the custom chips and is required by sound and graphics programs.

The chipmem option on expansion boards will only work if you have ECS, but you will have to modify your motherboard. Nasty.

Programming triangle

I am a student studying for A Level computer science. I need to learn Pascal for my project work and I would be grateful if you could send me a list of any Pascal compilers available for the Amiga 500. I am looking for a simple to use program (I use BBCs at college) which is, preferably, as cheap as possible.

M. Lott,
Studentville .

Your luck is in Mr Lott. Not only is one available, but it is so cheap it was in the PD section of the August issue.

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hits the shops and when it gets reviewed in the mag... what normally happens is the software house send us the finished, shrink-wrapped game a week or two before it gets into the shops.

We decide whether or not to review it, and if so the review is written in about a week to ten days. It then goes into the magazine.

A worst case scenario means that the delay from us getting the game to it appearing in a review in a shop is about seven weeks. The best case is about two weeks.

Software houses all have their favourite mags, depending on how they see circulation, readership and the independence of the editorial team from advertising accounts. This is why we sometimes don't receive a certain game at all, ever.

Its all very interesting, but remarkably petty at times.

Virus vandals

THANKS for the advice on those naughty Rampage wallies giving us a virus on their disk magazine. I checked my copy as soon as I saw your warning and, yes, it was infected.

My copy of VirusX4 killed it off a treat, however when I read Steve Tibbet's doc files on the various symptoms of Lamer II it prompted me to check all disks that I'd used in the past couple of weeks.

After going through some 50 disks I found another infected one, Stampede 2 disk 2 (Rampage's previous name). I definitely hadn't used this one since I had purchased Rampage 3, so maybe this one had originally been the infected disk and it had infected the later issue.

I'm telling you so that you can pass this on to the rest of our readers, though I'm sure most would check all their Stampede.Rampage disks "just to be sure".

This brings we round to the subject of virii in general. I've found three breeds: The irritating, the awkward and the nasty.

The first kind don't do any damage, they just need a swift dose of VirusX to clear them up. The second kind normally don't do permanent damage.

They also need VirusX, but you will probably have to do a bit of repair work. The nasties are those that kill your disk's data permanently. This is vandalism in my view and the culprits should be punished severely. We have enough problems with disk's copy protection causing programs to crash or hang.

This can be caused simply by your drives being dirty, misaligned or out of tolerance slightly. So when creeps start spreading destructive programs around it's no fun at all.

Botch of Botch of the Month

YOU were too late with your Botch of the Month on "How to install a disk". I just assumed my poor knowledge of how to use Workbench was to blame: I've wiped the disk.

Anyway, it's made me write and ask about *Amiga Computing* doing some articles for the likes of me who hasn't got a grasp of CLIs.

I would like to have ago at learning how to program, but all the books I've looked at and all your articles seem too advanced, or at least assume a high degree of understanding.

I need a beginner's and intermediate level guide to stand any chance of grasping what it's all about.

Because of this "thickie" level all the disks you include with the mag aren't any use to me because I'm system illiterate and don't know what possible use any of the utilities are likely to have.

I've only been reading the mag for a short while, and it's cost with disks I'm not using *had* made me decide to cancel. But I'll hang on for a while now I've written to give to a chance to help me.

S. Heywood,
Barlby,
N. Yorkshire .

Hey dude, don't put yourself down! Anyone can learn to use the Amiga: It's not difficult, it just takes time.

By not using the cover disks you are denying yourself the best possible learning tool – experimenting. It doesn't matter if you don't know what is going on, but you'll never learn if you don't try.

If you are really stuck, the Abacus range of books are a good place to start. We will be addressing the problem of trying to appeal a bit more to folks new to the machine, so stay tuned to this channel!

I wouldn't hold out much hope for the "Botch of the Month" explanation. Some brainless nerd managed to botch them too. Sigh. Remove the last INSTALL from the last line (INSTALL df0:) and it will work. Probably.

Coding challenge!

I HAVE a problem which I want to put as a challenge to your readers. Basically I am trying to write a program which will produce a fixture list for any even number of players.

For example, for four people A,B,C and D it will give:

Round 1, A vs. B and C vs. D
Round 2, A vs. C and B vs. D
Round 3, A vs. D and B vs. C

Simple you say! However, with more players it gets exponentially more complex. For eight players the solution is relatively simple, but after that it gets really hairy...

I have written a program in AMOS that will calculate up to 24 players relative quickly (three hours!) but it merely tries each match until it finds one that will fit.

My challenge is: Can anyone calculate 26 or more players, or better still, find a mathematical formula that will give solutions for any number of players? It's not as easy as it looks!

Paul Williams,
Northfield,
Birmingham .

I had to physically restrain Aj from loading his C compiler and writing a program here and now. He had glazed look in his eyes, and he kept muttering "binomial expansion" over and over.

However, I'd rather throw the challenge over to you, the loyal readership. Can you write a program which will do the trick?

Pedigree poser

A CRY for help to you and your readers! A disabled relative of mine is a keen and successful racing pigeon breeder. This has been a life time hobby and since his retirement a lifeline.

However because of his disability, he now finds writing a frustrating task, so with me being an avid Amiga user I have offered to log and record his large and changing stock of pedigree birds. Here we hit the problem.

Racing pigeons require a pedigree to be sent with the birds to ➤

➤ their new owners. This is similar to a family tree tracing three to four generations and a little detail of each bird's successes.

I am, however, unable to find a program that will allow me to database the pigeons with their details and recall and print them in such a fashion.

Do you or your readers know of the existence of such a program either commercially or in the public domain. Or would a programmer be prepared to take the challenge and code such a utility?

I feel sure that with the amount of breeders of pedigree animals in this country that such a program must be a viable proposition and can only help enhance the Amiga's reputation as a serious home computer and not just a games machine with "excellent graphics and sound capabilities."

All too often I hear these words and it makes me see red, yes, alongside Macs and Sun workstations the Amiga may pale a little, but with the arrival of programs such as Pagesetter II, Pro Page, and the many and varied accounts, spreadsheets and databases now available in the more "serious software" market surely the Amiga deserves more credit.

With the expansion hardware now available I feel sure the Amiga is more than a games console with a keyboard!

Please print my address (if this letter reaches the print room) as I would be grateful for any help in locating the above program.

Stuart Doe,
58 Winchester Rd,
Colchester,
Essex.

Hmmm. It really depends on how complicated things are going to get. If you want to catalogue birds on a large scale you will need a fairly expensive and extensive fully relational database (to avoid having to fill in the same details again and again in different records).

However, I'm sure it would be quite possible to adapt one of the human genealogy programs to your needs. I believe there are some in the public domain and I'm fairly sure that some kind Amiga owner will get in touch and let us all know.

IFF only...

I HAVE recently changed from Spectrum to Amiga and am trying to understand AmigaBasic. I would like to know whether I can use pictures from DPaintII or Spritz in the basic programs I am writing. If so, I would appreciate a simple to understand answer please, if that is possible.

Arthur Dark,
London.

Almost all art packages on the Amiga, including the two you mention, use a system of saving graphics files as a standard IFF form. IFF is a standard way of transferring information between similar applications on the Amiga, and is a subject more fully discussed in the Almanac.

It really depends what you intend to use the graphics for, but for a start you'll want to read them in and display them. This is very easy indeed. In fact it is so easy that CBM have already written the program for you, you'll find it in the Amiga Basic drawer on your Extras disk. It's called LoadILBM. Simply adapting this program may fulfil your requirements.

If you want to do anything more serious I recommend you get a proper version of Basic or even AMOS, which is quite excellent for graphics.

Softwars

I AM writing in reply to everybody saying that Amiga software is too expensive, and I agree. The introduction of budget software helped a bit, but due to their bad graphics and gameplay they weren't much help.

I know everyone grumbles about the prices. Who wants to pay £19 to £25 for a computer game that will probably be completed after a couple of weeks, with all the tips and cheats in magazines, or given up.

You might see a scene shot or review in a magazine and think what a brilliant game then when you spend 25 quid and get it home it's not entirely like what you imagined it to be – less gameplay or the screenshot was for another machine.

But then you have to look on the programmer's side, I mean when I leave school I dream of becoming a programmer and having "loads a money!"

Maybe the prices could be lowered a couple of quid, but remember every time you buy a game you are helping some poor destitute programmer out there.

Nick Wright,
Thornton Heath,
Surrey.

I forget how many times I have replied to a letter like this. The price of software is one of those debates that will go on for as long as there are software houses. Again I say, the reason that software is priced so high is because that's as much as software houses can charge and still get people to buy the game – if you don't like the price don't pay it.

I would challenge your assumption, as I'm sure many professional programmers would, that the development team make vast sums of money out of the sales of their games. Although individual contracts are of course negotiable, I think you'll find that as a fraction of the price of a game ,they would be lucky to be able to buy a tired old hack a half of shandy.

Why, oh why, oh why?

I HAVE just started reading your September issue and I must say it is the best magazine on the market. The Public Domain, The Code Clinic and The Amiga Scene column are among my favourites. The free disk is a delight (how about more assembler code?).

I have tried reading programming magazines such as Transactor and I.C.P.U.G., but as you may know Transactor went bankrupt and I.C.P.U.G. is just damned inconsistent (always changing its format). Anyway, I have a few questions to ask to you which have been bugging me:

1. Can the internal clock, which is supplied with ram expansions, be accessed with a specific address? And if so, is it possible to read and write to this location using assembly?

2. Is it true that viruses can be stored on the internal clock's memory and therefore still be alive when switched off?

3. Can a higher processor be installed into a normal 500? Can all the custom chips be accessed in the normal methods using the new processor? Will everyday software still load? And how many addressing methods does a 68030 have?

4. Why do people get so scared about viruses? My friend is paranoid about them. Every time I give him a disk he has to analyse it with 100 different virus checkers!

I have never had any trouble with viruses in my entire life. In fact I have a couple roaming about my disks. Unless they really annoy me I wipe them out.

Why have people slaved over making flashy virus killers when the Install command on the C directory does a better job? It totally rewrites the boot–block whether it detects a virus or not. Surely this is more efficient?

5. Does the new CDTV from Commodore have the option to program it and do you think it will overrun the Amiga market like the Amiga did to the 64?

6. Do you think I will win your prizes?

Jan Paldermans,
Rotterdam.

Thanks for your comments. Now to the answers:

1. Yes, if they couldn't be accessed, how would Preferences be able to set them? Or your Amiga be able to tell the time? I don't know the addresses, but I'll ask Jolyon to mention them in next month's Machine Code column.

2. No, there isn't enough room. Probably. Some viruses can effect the clock's contents, but none will live there.

3. Yes, yes, sometimes, dunno.

4. You have obviously never had a commercial game destroyed by a boot-block writing virus. Or a month's copy vanish by a file destroying virus. Remind me never to put any disk you send me into my drive.

5. Hmmm. Depends what you mean by "program". I don't believe it will overrun the Amiga market. It is aimed at a different group to normal Amiga owners. If it ever catches on.

6. Unlikely.

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Access VISA

Steinberg, Aitken

If you're looking for a tried and tested music sequencer, Steinberg's Pro-24 could be the insect's leg joints. Jason "Donovan" Holborn puts it to the test

STEINBERG is a name that will be familiar to anyone who has even the vaguest idea of what's hot in the current MIDI music software scene. Even in the most hi-tech of recording studios, you'll find Steinberg products working alongside Fairlights and Synclaviers, churning out anything from music for the latest feature films to the next chart hit.

Unfortunately for Amiga musicians, Steinberg have preferred to restrict their activities to somewhat less well endowed machines such as the Atari ST and the Apple Mac.

However, as a sign of the Amiga's growing importance within the music scene, Steinberg have finally seen fit to release their very first product for our beloved machine: Enter Amiga Pro-24.

Pro-24 (which is actually called Pro-24A – not Pro-2400 as we were originally led to believe) arrives in a very attractive box folder of the quality more associated with high-end wordprocessors and databases. Contained within the voluminous folder is a single program disk and a fairly comprehensive ring bound manual. One of the biggest disappointments is the presence of one of those incredibly annoying dongles.

The Amiga dongle plugs into the second joystick/mouse port and *must* always be present while Pro-24 is running – if you unplug it while Pro-24 is still active, the program complains bitterly by locking up completely, leaving you with one dead sequencer. It's Steinberg's way of telling you that you're only allowed to run it on a single machine at any one time.

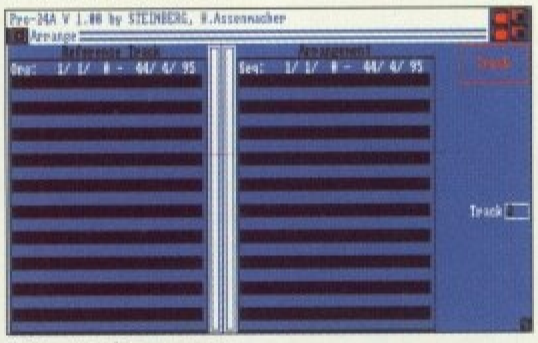
Just like a professional multitrack tape machine, Pro-24 offers 24 tracks of realtime MIDI recording. In many respects, there's not a great deal of difference between working with Pro-24 and working with a multitrack – except of course that Pro-24 records MIDI data, not sound.

Those of you spoilt by programs such as MusicX – which offers 250 tracks – may find the thought of having to work with a mere 24 tracks somewhat restricting, but there are several factors you must consider.

For starters, how many of MusicX's 250 tracks do you actually use? (I never use any more than 20). Secondly, what's the point of having all those tracks available when MusicX will only allow you to play a maximum of 20 at any one time? OK, it's nice to know they are there, but you don't really need them.

After what seems an eternity of disk whirring and crunching, Pro-24 springs to life (that is, if you've remembered to plug in the dongle).

Upon loading you'll be greeted by a rather crowded tape transport page containing a bewildering number of icons and other associated gadgets. Closer inspection soon reveals that most of the icons are pretty standard.

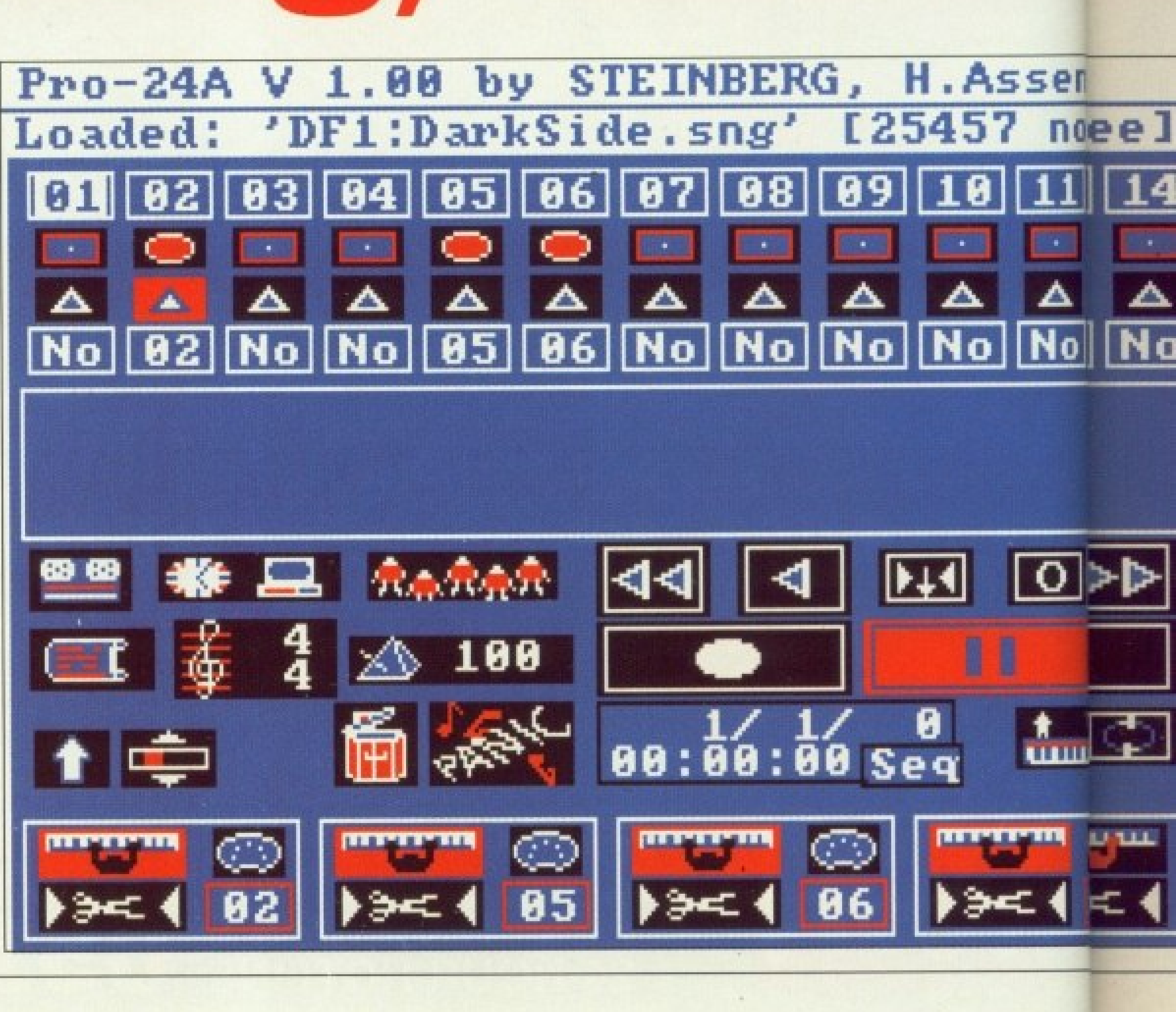


The track arranger

Along the top of the screen are a row of gadgets that control the 24 tracks they can be switched on and off, assigned to different MIDI channels and so forth.

Below this is a rather empty rectangular box that doesn't seem to do a great deal – until, that is, you strike a key on your MIDI keyboard. This handy box acts as a sort of monitor that displays MIDI activity across all 16 channels.

When you strike a key, Pro-24



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shows which channel it is receiving the information from, where it is to be sent to, and how hard the key was hit (you'll need a velocity–sensitive keyboard to take advantage of this).

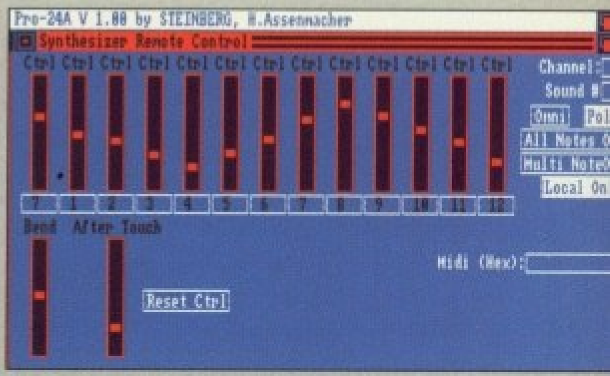
Further on down are the now familiar tape transport controls. These include the standard collection of icons to record and play sequences, start, stop and pause operation and of course, the old fast forward and rewind gadgets.

Littering the rest of the screen are a number of extra icons that allow you to define different aspects of the sequencer's operation. This is one area where the Amiga version of Pro-24 differs from its ST parent. The ST version relied heavily on pull down menus, but a large number of previously menu-based functions have been moved out and placed on the main screen, making Amiga Pro-24 considerably more icon based.

WORTH a brief mention are Pro-24's range of extra utilities designed to make the task of managing and manipulating MIDI data somewhat easier.

Synthesiser Remote This utility lets you send commands to your synthesisers using a combination of MIDI controllers and SysEx messages. By defining a series of proportional gadgets you can configure the Synth Remote utility specifically for your MIDI setup.

SysEx Filer Save money on synth RAM cards by using Pro-24 to store all your synth sound patches. The SysEx filer can receive and send SysEx data from just about any synth that is capable of generating such messages. These dumps can then be stored on standard Amiga disks.



Synth remote control

MIDI Mixer Similar to the *AutoMix* facility in KCS 3.0, the Pro-24 MIDI mixer simulates a conventional, and rather expensive, mixing console.

Echo Generator – Just as the name suggests, this *echos* notes, allowing you to create reverb and delay effects.

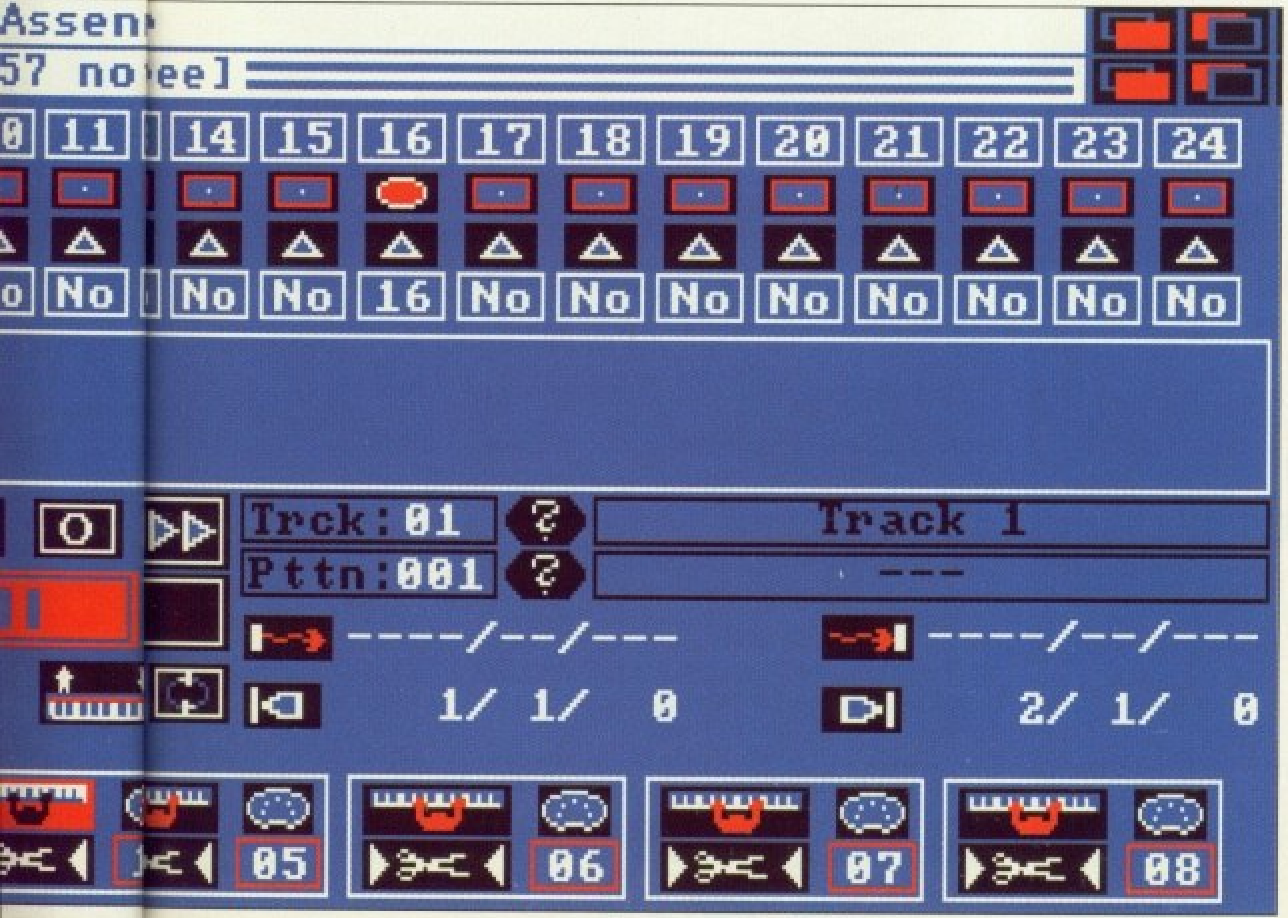
BEFORE you can start to do anything, you'll want to record something into Pro-24. Like most modern sequencers, it offers a vast range of recording options. There are three recording modes – normal, mix and auto.

Normal mode is pretty obvious – whenever you record onto a track, any previous performance information will automatically be erased.

Using Mix mode, Pro-24 retains what ever is already stored in the track, making it possible to "layer" sequences.

Finally, we have auto mode (which other sequencers called *Punch in/Punch out*). Once selected, Pro-24 will automatically start recording your key depressions as soon as you hit the keyboard.

en and Waterman?



This mode makes it possible to make changes to existing sequences as they are playing. Once again, all pretty standard stuff.

If you own a keyboard with a built–in sequencer like the Korg M1 (the keyboard I use) it's nice to be able to dump sequences straight into your computer-based sequencer without having to mess around playing each track in turn.

Using a system of subtracks, Pro-24 makes it possible to record from up to eight MIDI channels simultaneously. Not only that, but you can designate where the data from each channel is to be sent, making it possible to split a multi-channel sequence into several tracks automatically as it is playing. Very nice.

In addition to the 24 tracks for ➤


Cat and mouse
Sometimes the
SO WHEN ITS LIFE OR DEATH
Situation Allows
CONFLICT ON YOUR COMPUTER GAME
No Second
YOU CAN RELY ON CONTRIVER!
Chances . . .
BREEDER OF SMART MICE!
By
CNTRIVE
europe lt

recording normal performance data, Pro-24 has an extra supervisory track called *Master Track*.

This cannot store music data, but instead is used to hold time signature and tempo information, therefore allowing both the tempo and time signature to be changed many times within a piece.

Amiga sequencers have always been rather weak where composing percussion parts is concerned: Even MusicX failed to address this problem.

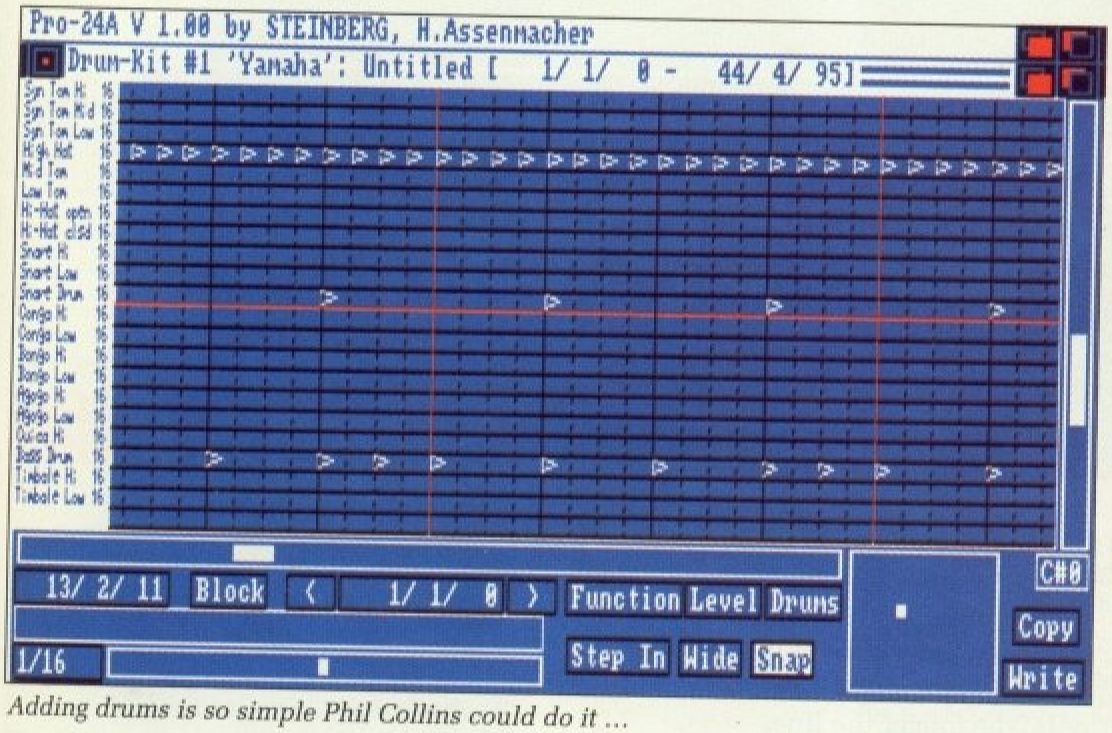
But now Pro-24 comes to the rescue with a unique drum editor that is sure to win it favour among many musicians. In truth, the drum editor isn't really that much different from the grid editor, so most musicians have probably been getting along fine with what they already have.

Songs are built up by pulling together several sequences using a reference track. To make this task somewhat easier, Pro-24 offers an *Arrange* window that does just that – it arranges songs.

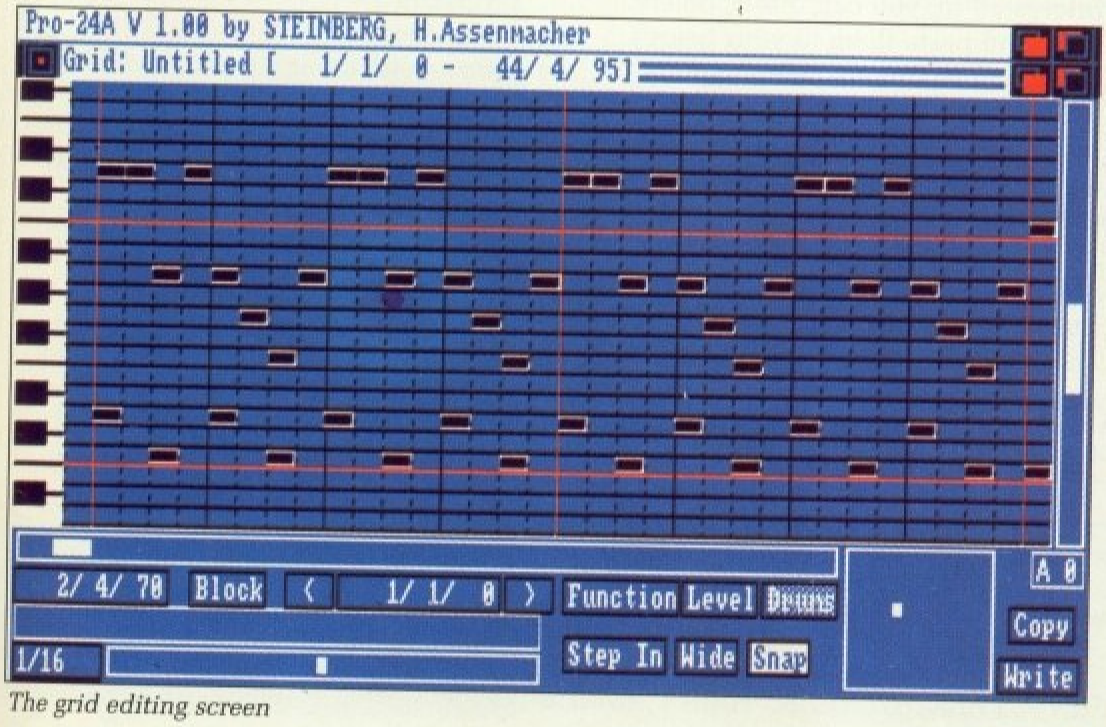
Just like the Master Track ,this reference track does not include actual music data. Instead, it contains cue points that specify when Pro-24 should play particular patterns.

For the experienced MIDI musician, this system will more than adequately handle the task of song arrangement, but I couldn't help feeling that many others could easily be overwhelmed by what is undoubtedly a rather unfriendly system.

Steinberg have put a lot of work into



Adding drums is so simple Phil Collins could do it ...



The grid editing screen

MUSIC MATTERS

MIDI – Musical Instrument Digital Interface – the protocol that allows you to connect your musical keyboard to your computer. Physically it looks like a 5 pin DIN plug.

SYSTEM EXCLUSIVE – Also known as *SysEx*. SysEx is the "loophole" in the MIDI protocol that was deliberately included to allow individual instrument manufacturers to design their own extensions to the MIDI language. This enables instruments of the same type to talk to each other through MIDI even when there are other incompatible instruments connected to the same MIDI network.

SMPTE (Pronounced "SIM-TEE") – The full name is actually SMPTE/EBU (which stands for "Society of Motion Picture and Television Engineers/European Broadcasting Union"). SMPTE is a system which allows music to be synchronised to film.

MIDI TIME CODE – Yet another synchronising system that is used specifically to synchronise MIDI instruments. Pro-24 offers support for both these synch'ing systems.

QUANTISATION Most music assumes an underlying regular pulse on which the timing of each note is based. A quantiser corrects any timing errors within a sequence by aligning notes with this pulse, therefore giving the sequence a smoother and more regular feel.

TRANSPOSITION – Transposing a sequence allows it to be played in a different key from that of which it was recorded in. For example, transposing a sequence by +12 knocks it up an octave.

MIDI CONTROLLERS – MIDI Controllers are a bit like SysEx messages, but instead of only being able to be understood by instruments of the same make and model, they can be understood by all MIDI instruments. They allow you to control such properties as the volume or modulation of an instrument and the ability to pitch bend notes.

PPQN – Stands for *Pulses Per Quarter Note.* All sequencers use a very high resolution clock that times each MIDI event as and when it happens. A single PPQN is the smallest possible unit of sequencer time. In general, the higher the PPQN, the more realistic the recording.

➤
Pro-24, and it shows. Years of development have honed itinto one of the most capable systems available. Combining powerful editing features with extensive recording and sync'ing options, Pro-24 is a worthwhile consideration which should not be ignored.

However, it certainly isn't perfect – after all, Steinberg themselves have improved upon it drastically with their latest ST sequencer, *Cubase*.

What really lets Pro-24 down is its song composition tools. It would have been nice if Steinberg had included some form of graphical *Arrange Page* such as the one they now include within Cubase. Even better, perhaps Steinberg should have gone all the way and produced instead an Amiga version of Cubase...

The company have gone to great lengths to try and convince us that Pro-24 is a very high resolution sequencer. Unfortunately, this just isn't true – clocking in at just 96 ppqn, it is 100 pulses short of MusicX and almost 200 short of the latest version of Dr.T's KCS.

For most of us, such technicalities won't make a great deal of difference to our music making, but for Steinberg to make such a claim is somewhat misleading.

With the news of MusicX 2, the choice between Pro-24 and the rest is no longer so simple. If MicroIllusions hurry up and get their new release on the streets, I can see Pro-24 having to fight hard for sales.

But gripes aside, Steinberg's system definitely delivers – if you're after a studio proven system, Pro-24 is definitely worth investigating.



The score editing screen: What a let down

IF you're anything like me, you rely heavily on the editing functions provided by your sequencer – after all, we can't all be brilliant keyboard players.

As well as the usual quantising and transposition tools, Pro-24 offers a number of extra editing facilities that are quite unique. These include *Remove Empties* which erases empty patterns, therefore freeing up valuable ram) and *Delete Doubles* which deletes any events that have been recorded twice.

One of the most powerful functions is the *Logical Editor*, which manipulates music data using mathematical operations.

Although complex and rather hard going, it is perhaps the most powerful editing function that Pro-24 has to offer.

These bells and whistles are all very nice, but there's nothing like being able to actually *see* your music. Pro-24 offers what it calls a *Grid Editor*, which is really no different to the Bar Editor within MusicX.

For those of you who haven't used such an editor, they basically represent the notes within your sequence as a series of lines of varying lengths – the longer the duration of a note, the longer the line.

By just clicking on the notes you're interested in, you can insert, delete, copy and paste them to your heart's content. You can also alter various MIDI controllers from within this editor.

Finally, we come to the score display facility – and what a let down this is. Amiga musicians have been crying out for a decent score editor, but Steinberg have reduced the Pro-24 scoring facility to a point where it is practically useless.

The ST version of Pro-24 included rudimentary score editing, but all these have been hacked out in Amiga Pro-24. As it is, all you can do is view your sequence as a score – and that's it. If you want to edit your music in score format, you're still going to have to fork out for a package such as Dr.T's *Copyist*.

REPORT CARD

PRO-24
Evenlode Soundworks 0993 898484
£285.95

EASE OF USE........
Rather unfriendly at first, but you'll soon get used to Pro-24's quirky ways.

FEATURES.............
Almost everything you could possibly need from a sequencer is here. Would have been nice if Steinberg had included a graphical arrange page, also Scoring facility is too limited to be useful.

VALUE ....
With MusicX coming in at almost £60 less than Pro-24, Steinberg may be well advised to reconsider their current pricing policy.

OVERALL 80%

Pro-24 is a rather unfriendly system, but it undoubtedly gets the job done. Personally. I'll stick with MusicX and look forward to the possibility of Amiga Cubase.

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GRAND MONSTER SLAM	RAINBOW ARTS	SPORTS SIMULATIONS Football contest using animated monsters	£19.95
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Amiga Arcade

Rainbow Arts

LIKE most of this month's *Amiga Arcade*, this story has been compiled after spending four days at the Computer Entertainment Show, held recently in Earl's Court, London.

Due to circumstances beyond his stomach's control, poor Green was forced to miss several appointments with software houses. This was not due (as several cruel rumour-mongers have insinuated) to self-induced liquid poisoning, rather to some dodgy mince eaten the day before.

But enough about Green's digestive system: On with the show!

Rainbow Arts were one of the companies which Green missed talking to, and what a missed opportunity it was too. The – and here I quote the remaining members on the Interactive stand – "stunningly beautiful" PR person Nicola Hemming was going to give him the details on all the latest games. Poor old Aj had to talk to her instead.

Remember Ballblazer? Remember thinking that 8 bit machines shouldn't be able to do things like that? Well, it's back, but this time it's on an Amiga and it's called *Masterblaster*.

Now you can have tournaments with up to eight players taking part, all accompanied by some of the smoothest graphics and most amazing sound ever (apparently). In fact, according to Nicola "It's so hot, your joystick will melt."

Some sort of gloves would seem to be in order when you rush out with your £24.99 later this month.

Also from Rainbow Arts is the equally fabby looking *Rotator*. It uses what certainly appears to be



a similar, but more advanced, system to US Gold's Rotorscope (as used in Rotor).

The graphics operate at a pixel level instead of a vector system, and the animation rate varies between 7 and 14 frames per second instead of about 5 and a bit.

We're not sure what this one will do to your joystick, but it should be in your local store at £19.99.

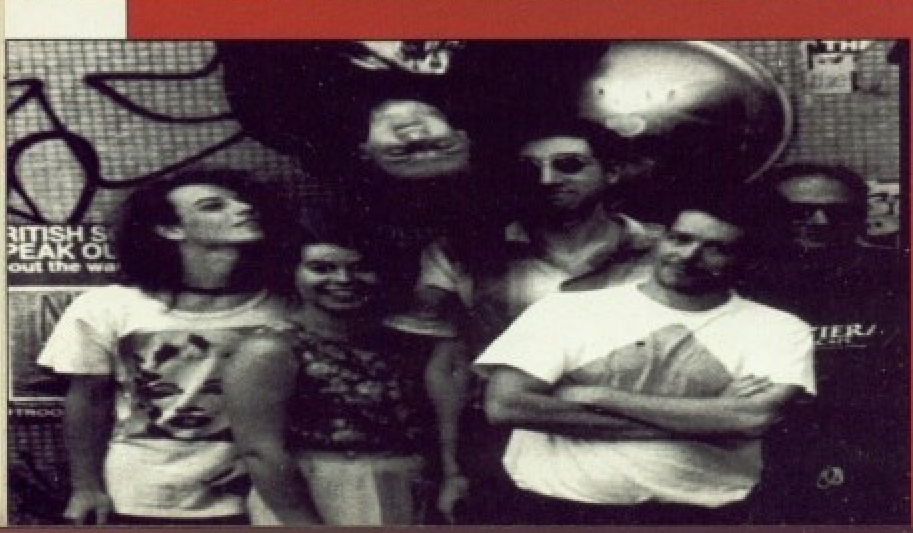
Gonzo games

REMEMBER *Wipe Out*? Yes you do – we gave it a gong award 'cos Aj liked it so much. Well, here's some good news: It's back again.

Or almost, for what we have here is a subtle re-work to produce *Street Hockey*. We mentioned it last month, but it looks so good we thought we would mention it again.

Besides, it gives us an excuse to use this silly photo of the guys (and gal) responsible. If "responsible" is the right word.







Renegade

HERE is an interesting story, not only for games players, but for games programmers.

You must remember the BitMap Brothers, and you must also remember the enviable reputation they have gained for producing Amiga software of the highest possible standard. You may also know that for their game XenonII they used music composed by the group "Bomb the Bass".

What you may not know, is that this link-up between the music and leisure software industries has spawned something new and wonderful: A new type of Games label which takes its lead from the music biz.

Renegade is the name of the company formed from the cumulative talents of the BitMap bros and Rhythm King Records.

"The new company will treat programmers differently", said PR person Adele. "Instead of some sort of disposable commodity, they become artists in their own right. They have a say in the packaging of their games. They also get a very healthy cut of the profits."

There are two games coming soon from Renegade: The first will be "Gods" to be released in January, closely followed by "Magic Pockets". *Amiga Computing* will be watching the new label closely, as it considers such a development to be long overdue.

AMIGA ALMANAC

MACHINE CODE

The art of timing: Jolyon helps cure you of the flickers

CODE CLINIC

Paul Holmes takes us inside an IFF file with his cover disk program

MUSIC

Stuck for a sequencer? Jason Holborn looks at the higher end of the music market

COMMS

Armitage describes the best way to get the latest software

D.T.P.

As Nic discovers, you don`t need a big budget to get professional quality

GRAPHICS

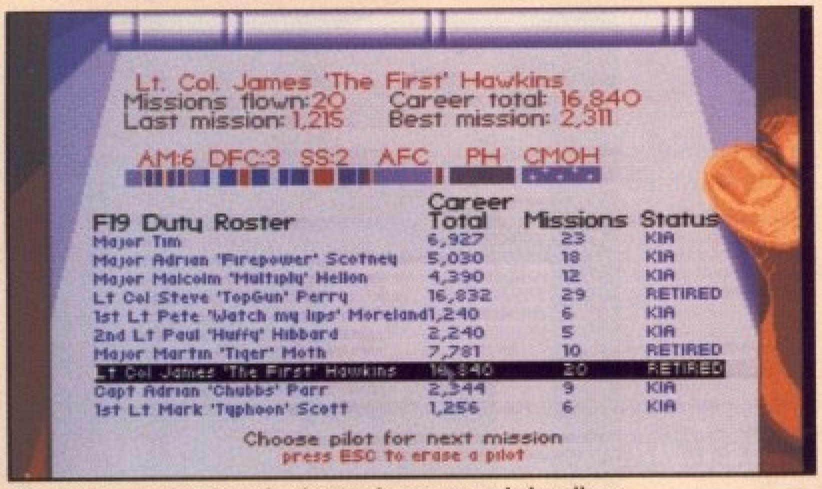
DPaint brushes get everywhere when Dave Mee is around

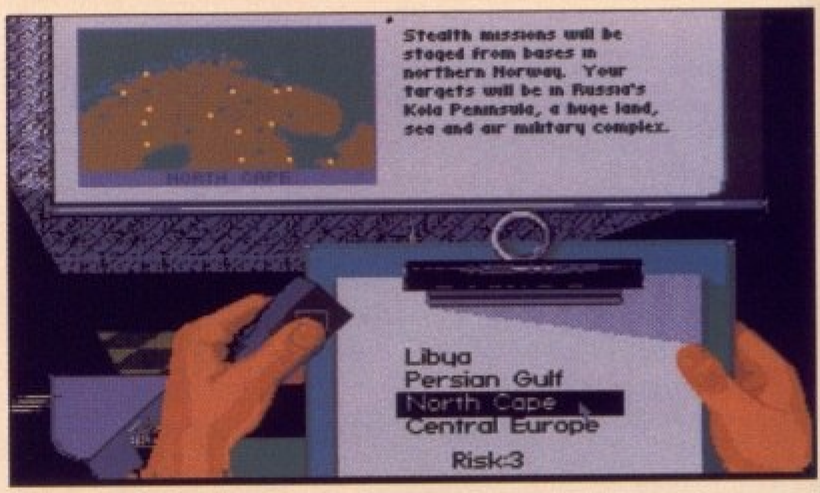
AMOS

AMAL is the animation language which makes AMOS special, says Peter Hickman

F-19 STEALTH FIGHTER

They seek him here...





The duty roster details each pilots performance, and also allows you to compare your pilot with the others in your squadron

BAH, pranged again. And after a successful mission as well. I'd just finished blasting villages and tank farms along the Libyan coast, had sunk a couple of ships, and was maneuvering to land back on the US carrier when disaster struck. The engine stalled.

Not a fatal occurrence unless you happen to be flying at 200 feet, which is what I was doing at the time. Still at least it was only a training mission. After being warned not to try it again in real life and given a combat readiness strip, I was ready for my next mission.

Or I thought I was. Oops, killed in action said the roster, just after my supposedly dead body had been cleared for combat service. Bit of a bug there methinks, but thankfully the rest of F-19 Stealth Fighter makes up for it.

If you thought Ocean were somewhat mean with their skimpy packaging for F-29 Retaliator (the aircraft that will never see active service) you have a treat in store with this Microprose game.

The box is huge, the manual thick, slickly produced and glossy, and there's a couple of maps and a keyboard overlay to help you master one of the world's most sophisticated aeroplanes.

It may be a complex plane, and a ditto game, but getting into the air is easy enough so you won't be spending three hours reading the manual before you can take off.

You'll want to at some point though, otherwise you won't have a clue as to what's going on.

F-19 Stealth Fighter offers four theatres of operation: That new American favourite, Libya, the frighteningly topical Persian Gulf – though the designers have missed out by not including countering an Iraqi invasion – the North Cape, and good old Central Europe.

Initially you will be offered training missions in which the enemy cannot hit you and you cannot crash, though this can be changed straight from the start. There are more than 4,000 different missions to be undertaken, though just how different some of them are is debatable.

Before taking off the four weapons bays of the F-19 need to be filled up, and here the program scores highly. Virtually every missile and bomb you could wish for is available.

The ground crew recommends your ordnance, but this can be changed to whatever you like. The back of the manual contains a welter of information on weapons systems, so even if you aren't au fait with missiles and bombs you can check up and choose for yourself.

This should be done because in the mission detailed above the ground crew installed a Maverick thermal imaging ground to air missile, which is acceptable against ships.

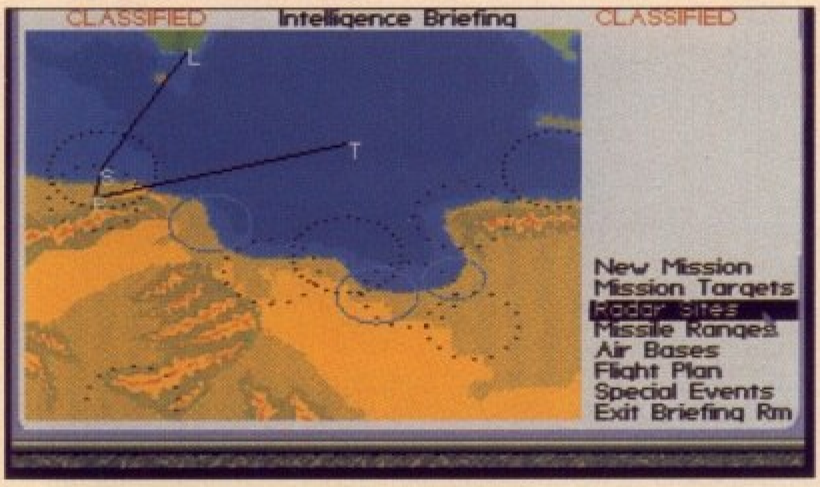
What I really needed, and did install, was a Harpoon, sea-skimming, radar and inertial guided missile. This is the standard anti-ship missile of the navy and air force.

As mentioned earlier, taking off is easy, as is maneuvering and flying level. Mastering the techniques of maximising the F-19's radar invisibility attributes takes practice though.

Thankfully the excellent man-









There are four mission scenarios in all, each one being divided into another three types. In all, this allows you to fly 4,000 different sorties

ual will guide you through fooling radar, avoiding missiles, strafing ground targets from 3km, and tackling hostile warplanes.

Unlike most other flight sims, the F-19 pilot needs to concentrate on remaining undetected until the target is reached, and then becoming invisible again after leaving the area.

Old Microprose hands will welcome the various medals and awards handed out after increasingly successful sorties.

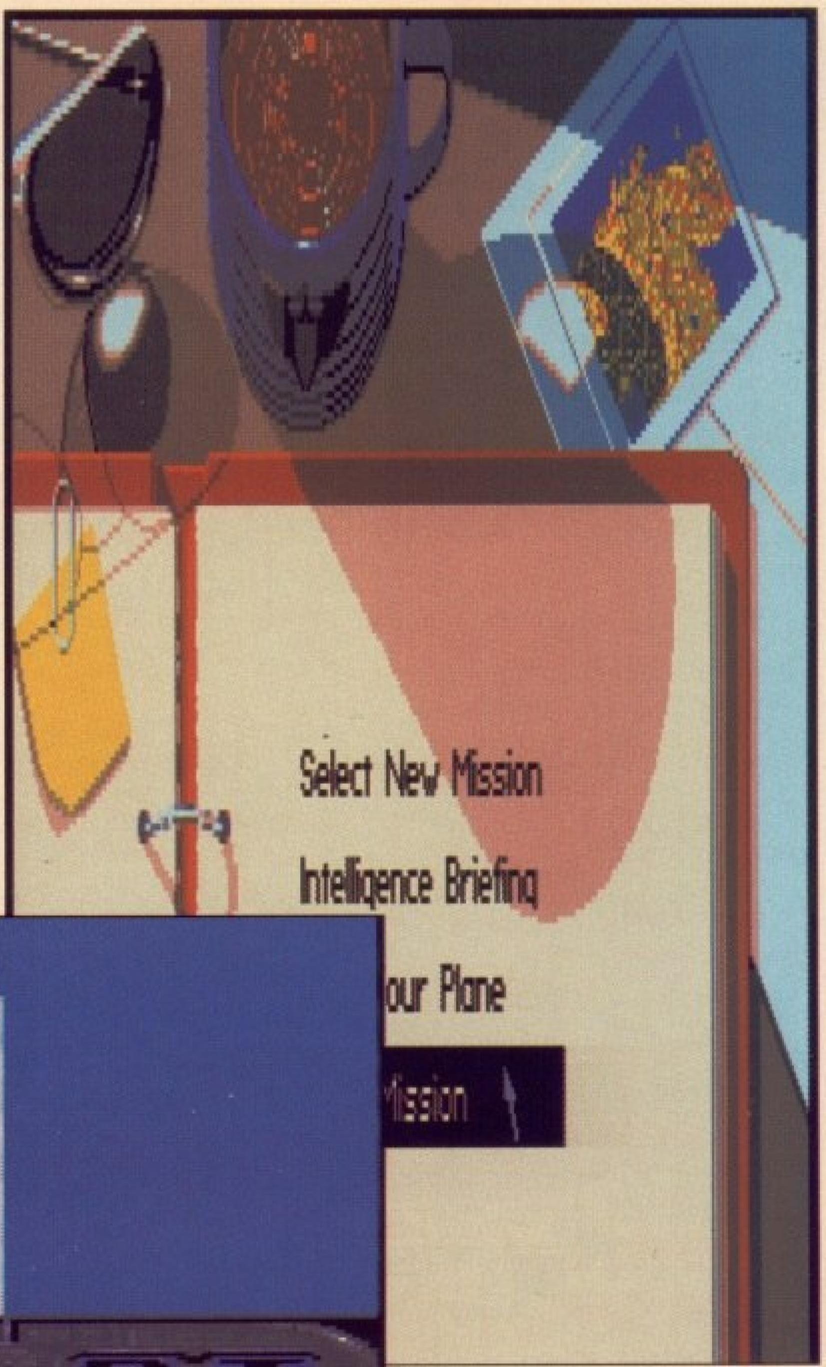
The speed of animation is impressive in F-19. Flying at low altitudes the scenery just whistles by, unlike F-29 Retaliator. Sound effects are generally good, but when you are flying a silent fighter you don't expect to hear much until the action starts.

F-19 Stealth Fighter has class written all over it. The graphics are pretty good, if not quite as glossy as the recent competition, though they are fast and the round-the-plane views are excellent. For those who want a strictly fly, shoot, have fun game then the Ocean sim is more in your flight path.

On the other hand, if you want a superb, sophisticated, enjoyable, complex and action packed simulation then you want a copy of F-19, a sim from the people who really know about sims.

Duncan Evans

F-19 Stealth Fighter *£29.95* *Microprose*	
Sound	██████████░░
Graphics	█████████░░░
Gameplay	██████████░░
Value	█████████░░░
Overall – 78%	





Bogeys at your six! The Migs follow your stealth, attempting to destroy – either turn and shoot or disappear!

SIMULCRA

Simulated excitement

SIMULCRA is one of those games who's plot reads like a drunken gamesters hallucinations. You see, up there in the future, if there is one, wars are no longer fought out on the battlefield, with people getting dirty, cold, and then blown intofleshy components.

Instead the interested parties boot up their copies of Populous X and wage war via computer. Well, not quite. They do wage war, but using simulated forces. Simulcraft, as they are known are thebasic instrument of destruction.

So what's all this got to do with me I can hear you asking (I have very large ears). Well, who would believe it but the computer running these war games has decided to get in on the act for real, by sending out simulcraft into the real world. It can do this because of the enormous energies contained within the system.

Er, yes. Alright, so its a load of tosh. Don't blame me, I don't write these scenarios you know.

Anyway, what you have to do is this: Guide your very own simulcraft around the 30 odd levels of simulator land, destroying energy generators. These generators produce forcefields within the levels that prevent you from going any further.

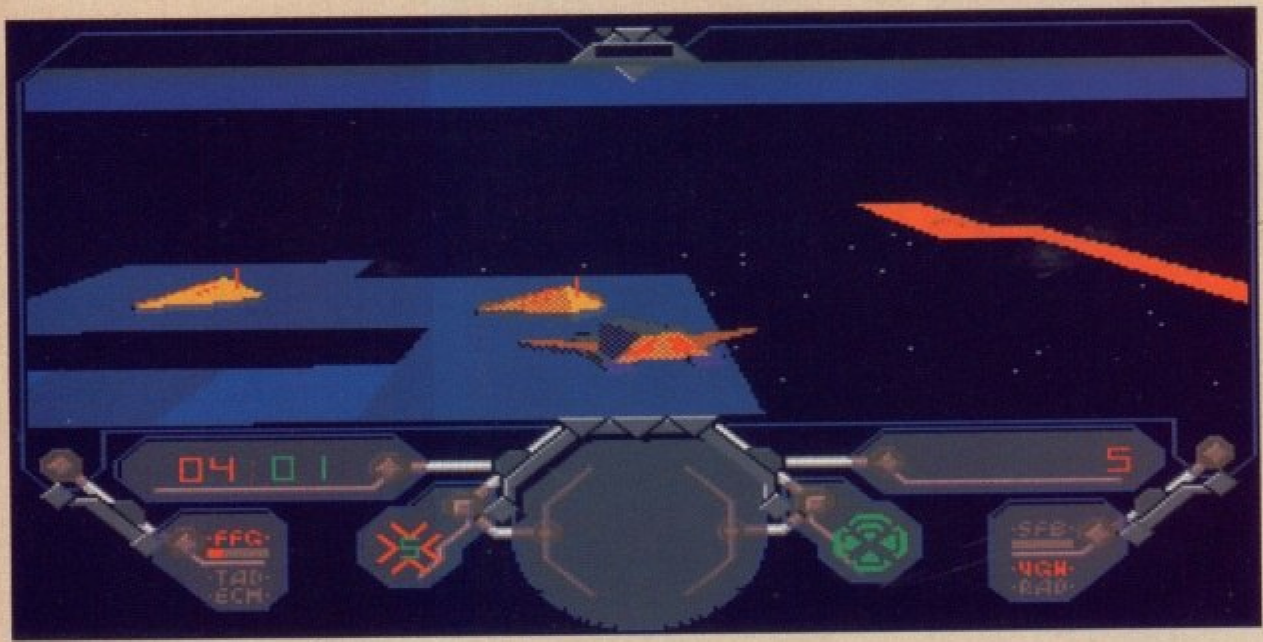
If you destroy all the generators everywhere then the computer packs up shop and turns into a vegetable rack. It does beg the question: Why doesn't the computer just create some more generators then, since it created the ones you are bent on destroying in the first place? I've no idea so you'll have to ask Microprose for the answer to that one.



Shooting the many assailants reveals the weapon pods which re-arm you



The red border is diffused by taking out certain power stations. Four weapons are available to aid you doing this



Once you actually get going the first thing you notice are the 3-D, Starglider 2/Virus/Interphase like graphics, and the second is that the screen rotates around your simulcraft, rather like US Gold's Rotox. Except that was in 2-D of course, which makes this all the more impressive.

Most of the time you are trucking along narrow, winding pathways, with a sharp drop into Nowhereville beckoning. Thankfully you can't fall off the edge. You just rebound from it. If you could fall off the game would be a nightmare.

It isn't though, and you can race along a tremendous speeds blasting away at everything that flashes by. Of course you may end up at a section where there is no land area. At which point you leap into the nearest simulkiosk and whip out your wings.

If you also have jet propellant then you can take off and fly over to the next platform, or you can just zip around, strafing all the enemy positions up and down the matrix. What you must watch out for are the red energy barriers. Even while flying you can't get past them, and at flying speeds your front shield will suffer a large fright if you run into one.

The other airborne hazard to beware of are the computers own simulcraft and planes which circle around like vultures waiting for an opening. Blast one as soon as it appears or it'll be perpetually sniping at you from above. Extra weapons and equipment to combat the simulforces appear phoenix like from the ashes of defeated installations.

There's ECM, homing missiles, energy boosts, shield replacements, radar and other stuff besides. In fact there really isn't any shortage of power ups as long as you keep on blasting everything.

On the earlug front Simulcra doesn't offend, but never rises very far above average. All the expected bangs and rattles accompany the action, and the obligatory tune does its thing to reasonable effect.

Although Simulcra isn't as puzzle orientated as Rotox, it is considerably faster, has impressive rotating 3-D graphics, is easy to play, and yet offers a 30 level challenge that will take some beating.

So I liked it (which is surprising considering how notoriously tardy I am) and if you shell out the necessary dosh I believe you will too.

Duncan Evans

Simulcra
£24.95
Firebird

Sound	8/10 bar
Graphics	9/10 bar
Gameplay	9/10 bar
Value	8/10 bar

Overall – 79%

CODENAME ICEMAN

The Colder War

AHH! Tahiti, the cool winds, golden sand and the beautiful aqua. What a way to take a holiday, just lying on the sun–drenched sand, soaking up the glorious rays of the daystar. And the girls! Wow! Ah! this is the life, think I'll have a swim.

What's this magazine? Hmmm, the oil crisis worsens with a war imminent. US and Russian military build-up as the dispute heats up. The US ambassador has been kidnapped - if the terrorists' demands are not met they will shoot him through the head and leave his body on the steps of the US embassy.

A message from General Braxton awaits you in the reception room of the holiday village on the edge of the island. You are summoned to Washington immediately where you will be briefed and dispatched with one objective. Severely inconvenience the US ambassador's captives and bing him back - alive!

The operation, code name Iceman, must be handled with the greatest care lest it all ends disastrously.

This is a bit of a breakaway from the standard Sierra adventure. Although the game begins with the usual play-style of Sierra, it soon changes to a bit of a simulation as you enter a sophisticated submarine to gain access to the terrorists.

But first you must find you way about Tahiti. After falling off my stool in a blind drunken stupor after buying this pretty girl a few drinks I realised that this was not Leisure-suit Larry I was playing here and restarted.

Although the graphics are not exactly what you would expect from an Amiga, they are reasonable and very colourful. The tropical music that drifts across the island and the more rock style that's at home in the bar is very good and you can hear different instrumental sounds.

The beginning became quite tedious for me. I found myself wasting a vast amount of time strolling across three or four screens time after time.

Although Code-Name: Iceman requires at least 1Mb of RAM, the software doesn't keep many screens in memory, and constant disk accessing slows things down quite dramatically. In fact I got very bored waiting for the scenery to change all the time. Many of the computer's responses take quite a while to appear, too.

There are few new additions to the Sierra game-play method.Previously, if you wanted to look at a particular thing, you would have to walk to it first then type the command.

Now in many cases you can simply look at an object from a distance, else your character will walk towards it. Many doors will now open for you when you approach them to avoid having to type "open door" – a great improvement, I'm sure you'll agree. As usual the packaging contains all the documentation necessary to enable ypu to navigate your way about the game. An (apparently) authentic submarine navigation chart of the Western Hemisphere accompanies the game and proves invaluable when you get to your single seater USS Black Hawk submarine.

Equipped with eight harpoon radar seeking missiles, torpedoes and sea mines, this underwater military vessel carries up-to-the-minute technology.

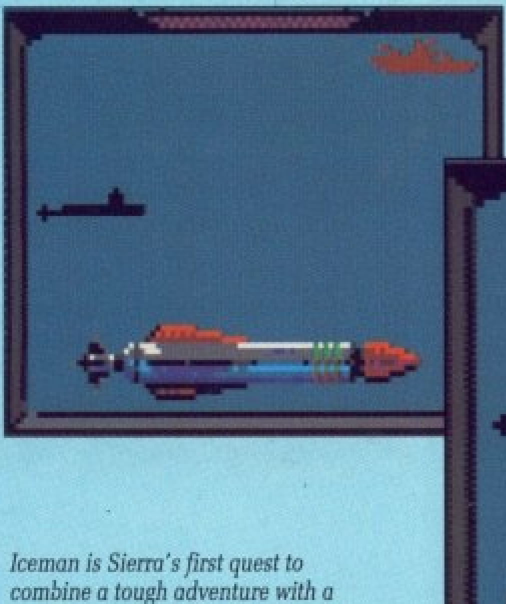
Iceman really should be played from a hard disk, but with five floppies in the package, it's going to swallow a large portion of your A590! Still, if you are prepared to wait for the game to access itself, I believe it's worth it.

Andrew Banner

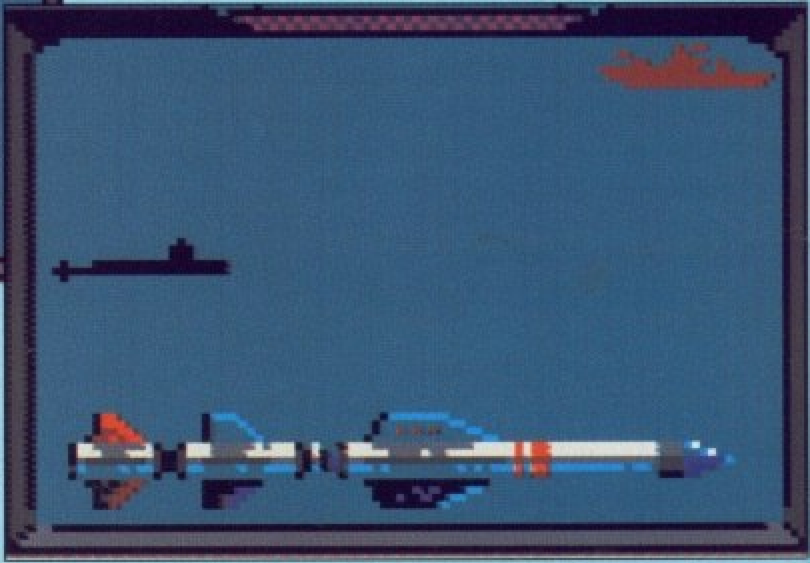
Codename Iceman
£29.95
Sierra/Activision

Aura	
Graphics	
Gameplay	
Value	

Overall – 76%



The Blackhawk's arsenal includes three types of torpedo, each one producing devastating effects on impact



Iceman is Sierra's first quest to combine a tough adventure with a combat simulator. The Blackhawk's control panel is neatly laid out, and should cause no problems when trying to navigate whilst in the midst of battle



MONTY PYTHON

Much too silly

SOME PEOPLE would say that trying to produce a computer game based on a cult TV show is asking for trouble. When that show is Monty Python, it's more like asking for a dead parrot to be stuffed in your ear. Despite this rather unwholesome possibility, Monty Python is indeed the subject of a new game.

The story revolves around Gumby (John Cleese lookalike) and his search for a brain. The search involves traversing a number of levels in which you explode cheeses, collect food (spam, eggs, sausage and beans of course), fend off nasties, and face the ubiquitous end of level guardian, all armed with a couple of whiffy wet fish.

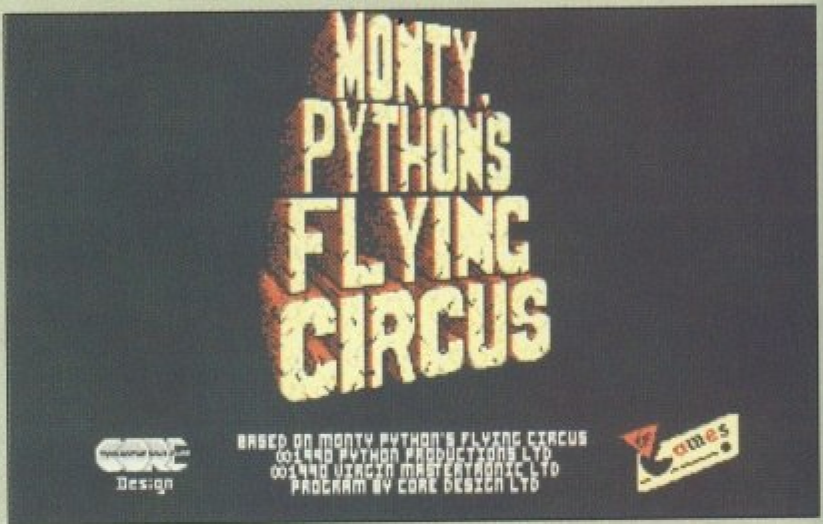


But don't be fooled. Behind this boringly normal scenario lies a game which will have even confirmed Python haters like me (!) hooked. The game is a great send up of itself and the whole gaming world.

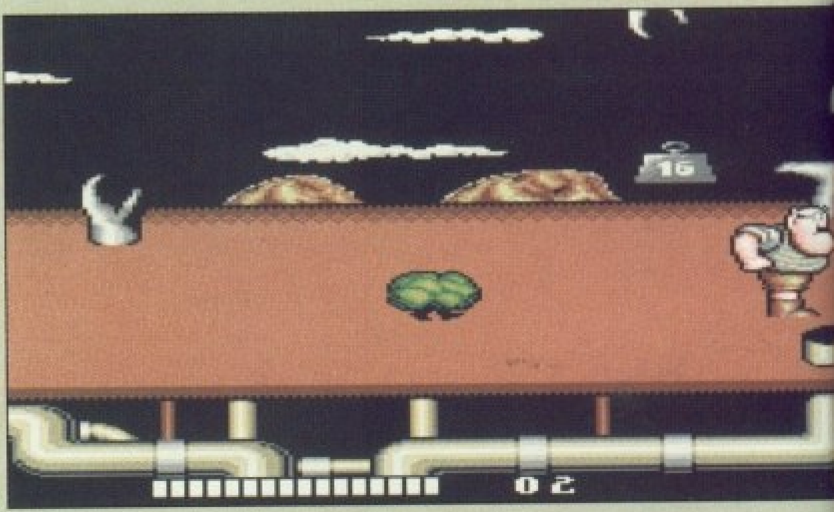
F'rinstance. Have you ever watched an opening sequence where the head of the character you are about to become, opens up and his brain makes a dash for the wide blue yonder? Have you ever played a game where the horrible, awesome, powerful end of level guardian is a Minister of the Church? Have you ever started a game with a score of 99,999,999 and tried to loose as many points as possible, in order to earn a place on the "extremely silly scores" board? Has your dear, sweet Amiga ever farted at you before? Thought not.

From the very first screen you will know that this is no ordinary game. Gumby's progress under falling 16 ton weights is followed closely by what can only be described as a bush on legs. What it was up to I have no idea. But I'm sure it didn't either. After that, things go from zany to zanier.

Most of the time Gumby travels between screens in the usual way. Occasionally, however, he'll find himself in a sort of "preparation" zone, where his head is disengaged from his body (with a satisfying ploink), and attracted to something more suitable – a fish, or a spring for example. Once the operation is over, a mechanical prodder shoves him off in the right direction.

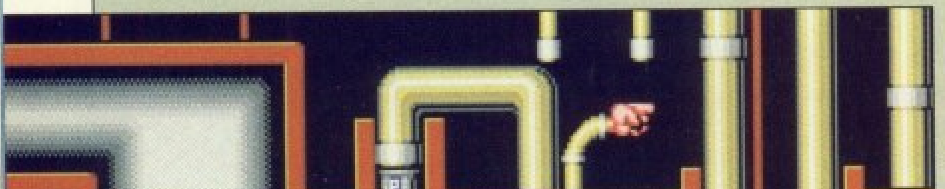


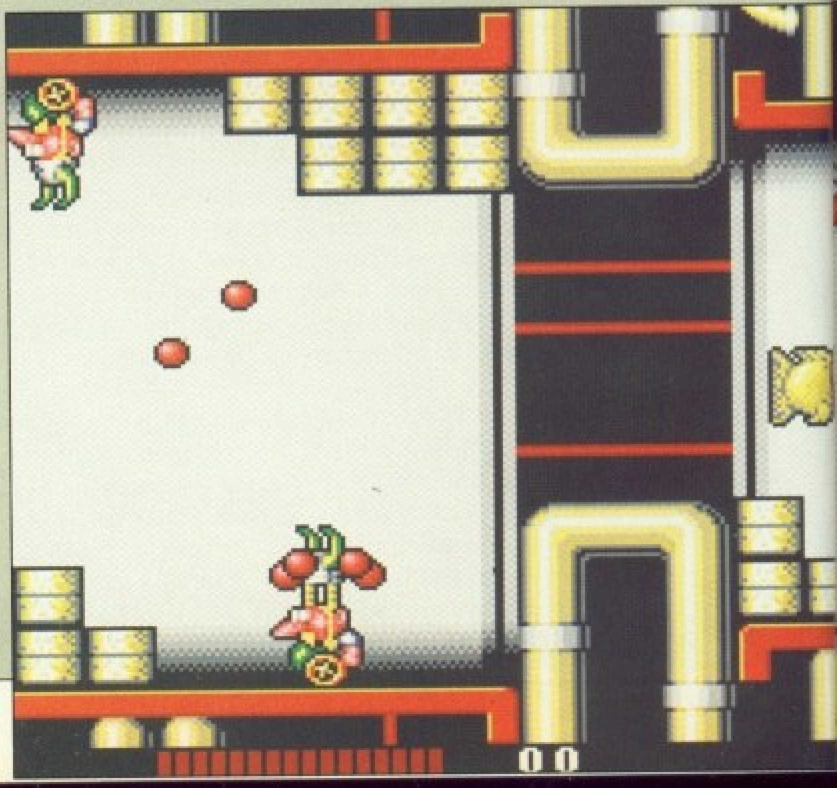
I'm sorry, this is far too silly. Stop it right now...look, I won't tell you again...



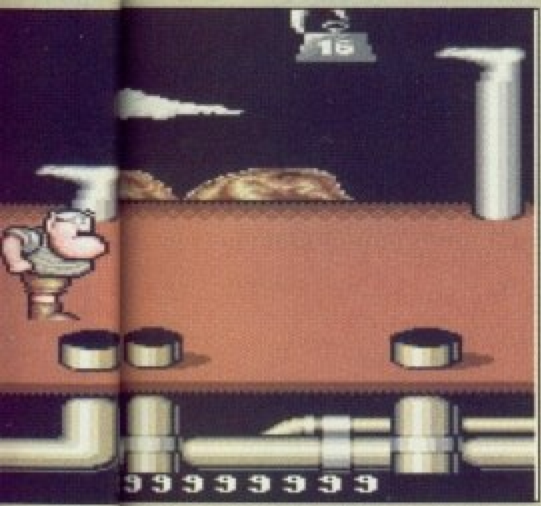
Monty Python is full of the unexpected. Just when you think you have got the hang of things, the screen will go blank and you'll get a "Game over" message. Hang on, I had two lives left! The #@!$#@ machine's popped its dongle again! But then a message will appear apologising for the break in your game, and telling you that normal service will be resumed as soon as possible.

Suddenly a flickery black and white breakout clone appears on screen. Another apology and play is resumed. I tell you all of this not













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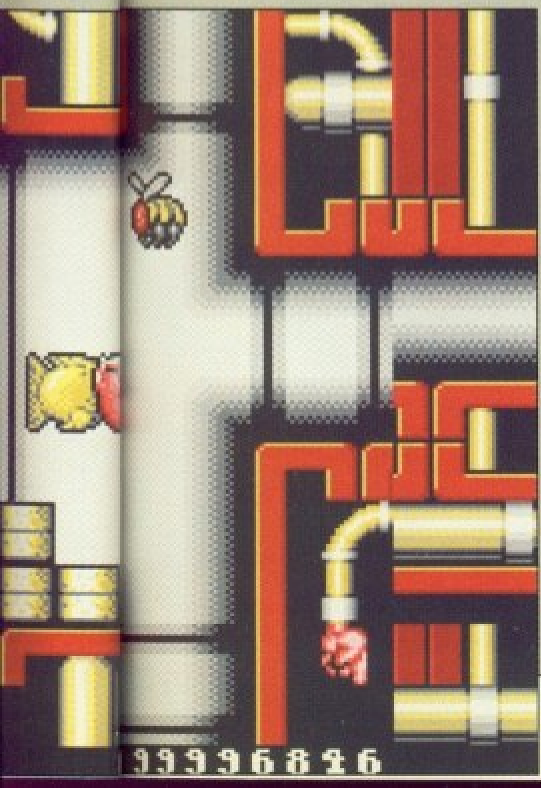
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to spoil you fun, because believe me, there are many more things like this awaiting you, but because the first time it happened to me I laughed so much I lost the two lives I had left immediately.

Monty Python is a good piece of entertainment. It's one of the few games where you will actually try to loose lives just to see the infamous foot descend and crush poor Gumby.

Laughing at yourself is a cathartic experience, and we don't do enough of it in this industry. My only complaint is that the game is a bit on the difficult side. If it were a normal arcade game, I might say it was a bit easy, but trying to concentrate on reaching the end of the level when falling off your chair with laughter is bound to loose a number of lives.

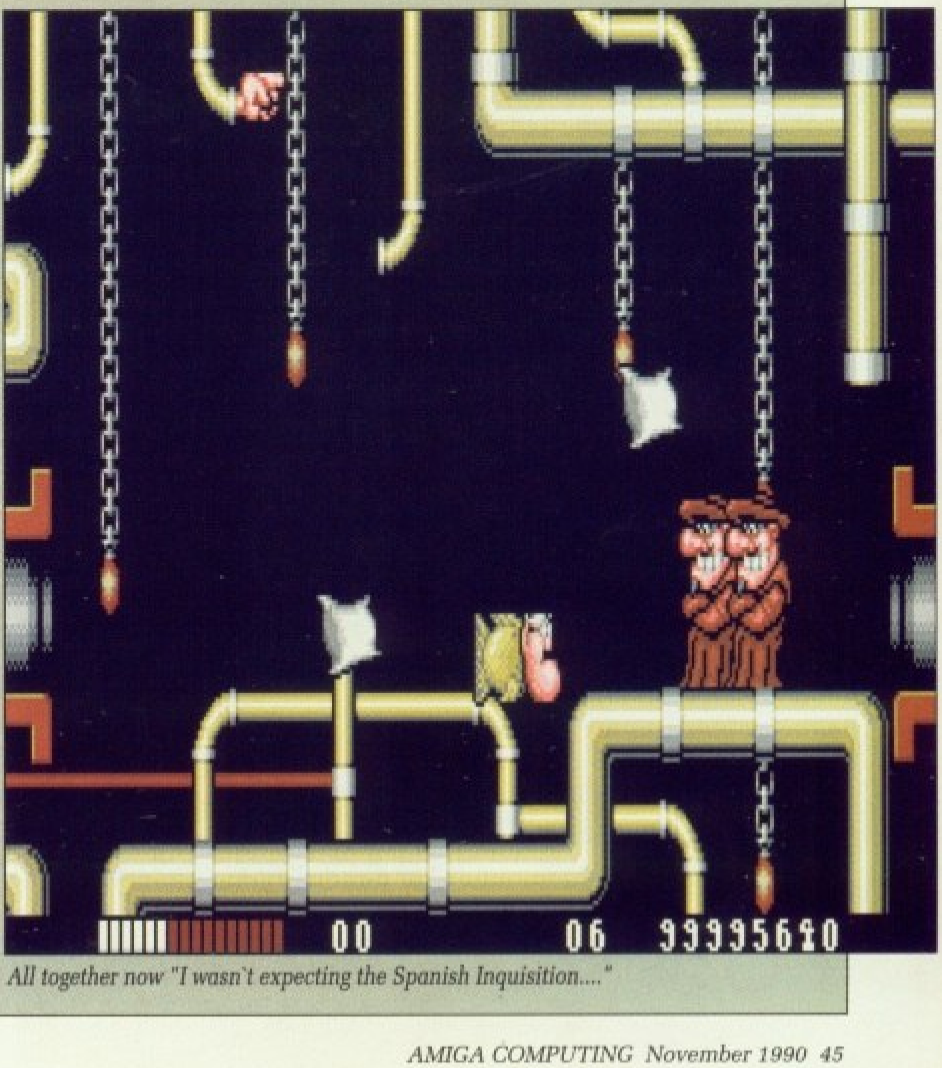
Mrs GettyGooseGreen
Creature Vogel



Monty Python
£24.95
Virgin

Sound
Graphics
Gameplay
Value

Overall – 82%



All together now "I wasn't expecting the Spanish Inquisition...."

PROPHECY 1 – THE VIKING CHILD

Give him a hand

Excellence

ONCE upon a time there was a Viking boy called Brian. Brian was a quiet child who worked for his master in a small village. One day his master instructed Brain to visit the planes beyond the forest to fetch herbs and plants for him. It was a long walk to the area where the herbs grew but Brain walked on, it was a beautiful day.

Whilst out on his mission a great storm brewed over the village. Thunder and lightning crashed and a huge cyclone ripped through tearing houses from their foundations.

When Brian returned to the village he could not believe his eyes. He stood and stared at the destruction, amazed. He enjoyed nature and often went walking in the forest and woodland surrounding his Viking village, for such was his occupation. The village had been completely destroyed, it's population fled or captured.

Oh, good grief! How I hate cutie baby stuff. Arrrggggh! But Prophecy 1 is a bit more than a pathetic childish story of doom, destruction and a heroic nine year old – it's about having fun, solving puzzles and poking nasty creatures with your stick.

Viking Child is Prophecy 1, the first in a series of Prophecy's from Wired, a label dreamt up by Imagitec Design and the European Electronic Zoo. The Viking Child in question is Brian, a mild mannered kid who's vowed to release his captured parents from the evil clutches of the god Loki.

From the start, you know that Prophecy 1 is going to be a colourful, visually and audibly pleasing game. Brian's story is told in the form of a scroll with pretty illustrations. The music is imaginative and enjoyable and you get a real feel for what is to come.

So, Brian sets off with noting more than a stick as weaponry. The village has been infested with evil mutants – trees that lob acorns at you are a common sight. But, as you soon discover, poking mutants with a short stick is tricky business – you'll need a longer stick. But longer sticks aren't easy to come by, in fact they don't exist, but various other arms do. Most of the mutants seem to have some loose change in their pockets so kill as many as you can and rob them of the coins which fly up as a result. With you newly found wealth you can visit shops to kit yourself out with the latest beast blasting gear. Considering this game is set in Viking times, some of the gear isn't exactly sophisticated. But magic soon alters that and homing fire bombs, smart devises and other additions make Brian's life a lot easier.

If you though some of the mutant's were a bit 'ard then just wait till you get a load of the creatures you find at the end of the levels. These range from huge, mean dragon crossed with Rhino type creatures to maniac teddy bears kitted out with armour and bloody big axes. Still there's a technique to slaying all of these, it just takes a bit of working out. In fact the whole game is riddled with puzzles, the one that will bug you most is the first in the Village. Where the heck is that exit? Sorry, no clues here.

There are some 16 different levels to this stunning maiden game. If that's not enough there are also 22 different original tunes to accompany your game, most of them are light hearted. But with so many colours, cute, detailed graphics and real gameplay, Prophecy 1 needs no fancy music – still you've got it so don't complain as the sound effects are not much cop. Wired are planning further games in the Prophecy series, I only hope that sequels are every bit as good as the first.

Andrew Banner



The map allows you to view the forthcoming locations – next stop, the forest



All your grocery needs can be catered for in this handy corner shop – you can buy big weapons, too


Brian's quest takes him across many hostile lands, his path being fraught with danger and strange insects

Prophecy 1 – The Viking Child
£24.99
Electronic Zoo

Graphics

Sound

Gameplay

Value

Overall – 85%

B.S.S. JANE SEYMOUR

Toiletries in space

AWOKE to the quiet bleeping of the life monitor computers attached to my body. Either that was that one hell of a party or a huge asteroid belt. No bottles, must have been the asteroids. The headache subsided and I could remember abandoning ship in the emergency escape vessel. Could even remember pulling back into the Earth's orbit. Getting up and yanking the tubes and probes from my skin, an electronic voice announced that there was a state of emergency.

Gone was the sweet view of the Earth, to be replaced by a mass of 20 huge green Federation ships of the Regal Fleet. An SOS message bellowed though the corridors from the commander of the flagship, the biological survey ship, B.S.S Jane Seymour. The commander began to tell of the plight of the fleet, how all 20 craft had been smothered with radiation from a Wolf-Raert Star going nova. "All systems are failing, and the only option appears to be to join the other crew members in the Cyrogenics." Apparently the ship's alive with alien creatures that have escaped from quarantine and are dangerous. The message was dated 8th July 2190, it's now 6th October 2195, and the Commander said that there was only enough power to sustain life for just 15 months.

After a conversation with the on-board computer I had no choice but to board the Jane Seymour and to risk my life to return to Earth. My own ship had not enough fuel to reach home and the only ship in this looming fleet that did was the last one. Unfortunately, because Federation bureaucracy is so stupid, boarding each ship is only possible in strict hierarchical order.

Apparently there are also a goodly amount of crew left on these ships but due to the level of radiation and lack of power for the life support, mutation forms are about 95 percent over the odds.

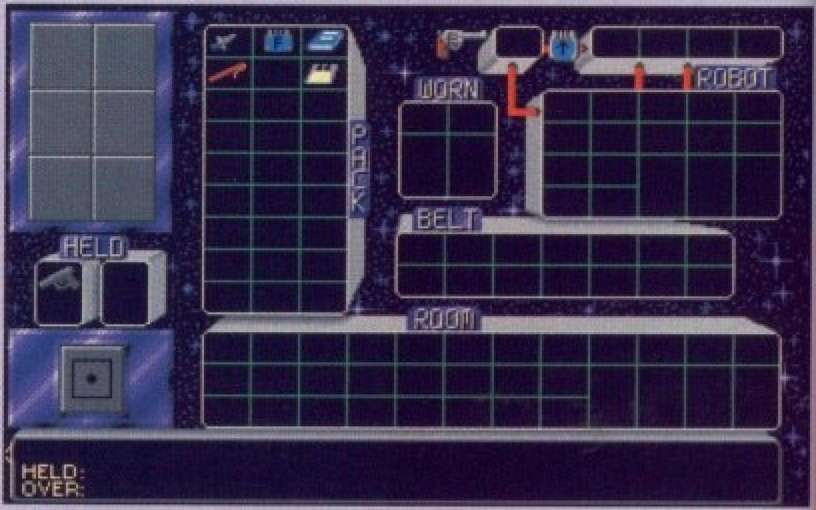
And so my quest was laid before me, I had to board each ship in turn to get home. The ships are all malfunctioning and I also have to return each to at least 80 percent working order so that I may board the next.

The B.S.S Jane Seymour is a clean ship. All corridors and paneling is very clean and sparkling, but there are a good few items littering the desks, many of which prove to be very useful. Strange though, I can't seem to turn around much and my movement is limited to straight ahead, back, left and right using some kind of sidestepping motion – it really feels inhibitive not being able to rotate. Also I don't seem to walk down the corridors, I just seem to jump from one place to another without seeing what went in between. Weird!

What the heck? Ugh! It just kissed me, huge, horrible red lips!



Face to face with a marauding alien – shoot it!



Your inventory screen, detailing what you've collected

Oh, I feel dizzy. Better use that medical syringe to heal my wounds, after I've burnt the thing with this flame thrower. Right now, where's that energy flux decoupler and inhibit lock to get this ship moving?

Must be quick now and find a suit, the life support systems are failing fast. Oh, a robot, wonder if it works? Great, fully functional, right carry this and come with me.

You have been reading an extract from my travel log, Chapter 354 on board the B.S.S. Jane Seymour. It took a good few hours to get this beast working but once I had got the hang of the controls and knew what I was up to, it became much easier. One thing's certain, it's a whole lot better than Federation of Free Traders.

Andrew Banner



Useful objects are scattered all around – as a rule, pick up everything you find

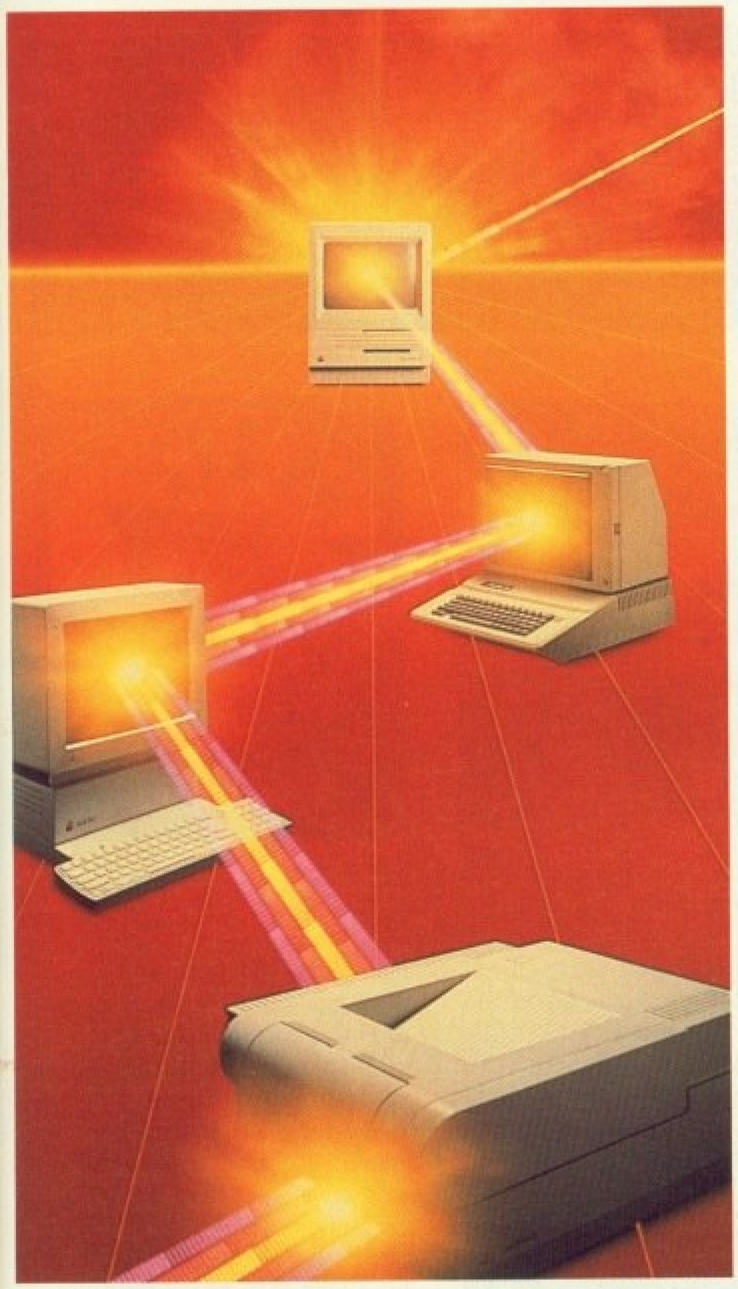
B.S.S. Jane Seymour
£25.95
Gremlin

Sound
Graphics
Gameplay
Value

Overall – 78%



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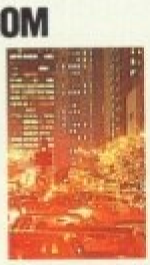
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OPERATION STEALTH

Tread softly, trust no one

My name is Glames, John Glames CIA Field Operative extraordinaire. Let me tell you about my last mission:

Operation Stealth. The stealth fighter is the latest radar invisible-war plane – the pride of the U.S. Airforce, at least it was until person or persons unknown thieved it from under their very noses.

Of course it was a bit difficult to trace on account of the radar invisibility. So that was my mission – bring it back or kiss goodbye to a promising career.

Professor Carling provided me with lots of hi-tech toys: False attache case, exploding cigarettes, safe cracking devices – the sort of things that no self-respecting secret agent should leave the house without.

As usual I didn't have much to go on but on arrival at Santa Paragua Airport a quick trip to the toilet soon solved that problem.

Did I mention the Paraguay connection? One of our agents in Santa Paragua sent a telegram asking for help with the Stealth affair. I suspected that General Manigua, probably in cahoots with the commies as well.

So from the airport I caught a taxi downtown into a world of subterfuge darker than the dark side of the moon on a very dark night.

Thus in Operation Stealth you assume the role of CIA Agent John Glames. This is done by means of Delphine Software's widely acclaimed Cinematique system, first seen in Future Wars. Everything can be controlled by moving the mouse pointer around the screen and selecting actions or objects from pulldown menus.

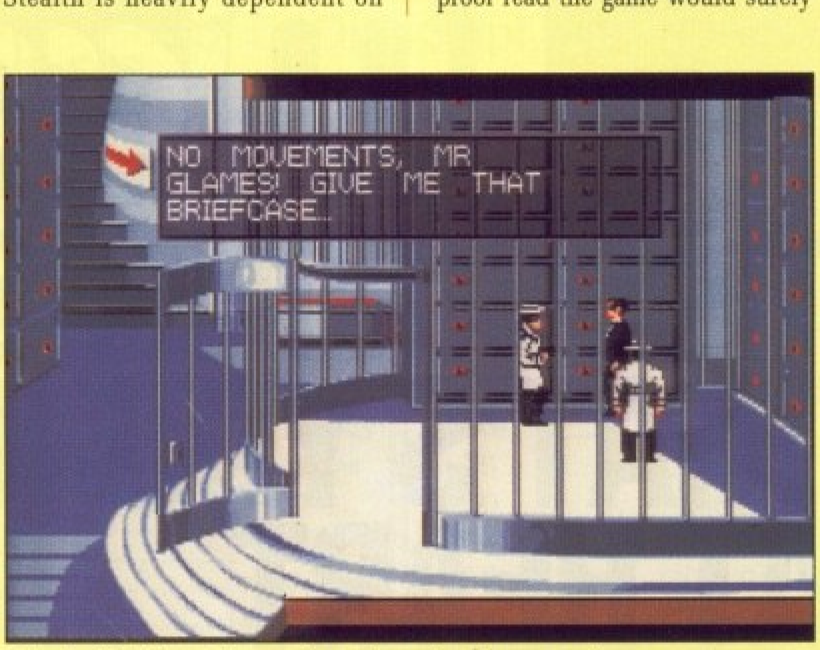
This system was criticised in Future Wars for being a little difficult to use: Some vital objects were so small that it was a matter of chance whether careful sweeps of the screen with the pointer would bring them to light or not. The positioning and size of objectsis improved upon in Operation Stealth. This doesn't mean it's easythough – you still have to work out what to do with an object onceyou've found it!

The weak point of the Cinematique System is persuading Mr Glames to walk where you want him to. It's easy to confuse him into missing a door and even after quite a lot of practice a slightly misplaced pointer can send him onto another screen which means an irritating pause for disk consultation.

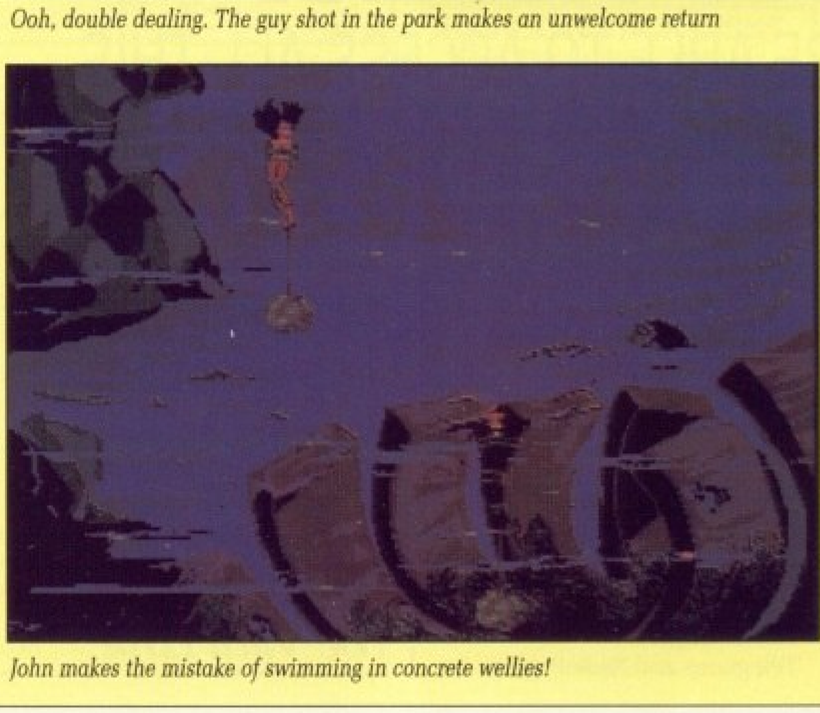


Glames arrives at the airport, only to be caught nicking luggage!

Like all adventures Operation Stealth is heavily dependent on clearly presented text, and it seems that Monsieur Delphine Software is not entirely *au fait* with the finer points of the Queen's English. Getting someone from this side of the Channel to proof read the game would surely have got rid of some of the more gross grammatical gaffs. A number of embarrassing unamusing messages spoils the overall atmosphere of the game too.



Ooh, double dealing. The guy shot in the park makes an unwelcome return



John makes the mistake of swimming in concrete wellies!

But these are small points. The graphics, although done in a comic strip style, are a clear and colourful representation of John Glames' three dimensional world, and must fill a large part of the three disks that comprise the Operation Stealth Package.

The sound, although not continuous, is excellent. Footsteps step and doors click perfectly. Secret agent gadgets make authentic secret agent gadget noises, adding atmosphere to the proceedings.

All in all Operation Stealth is a pretty damn good adventure game.

The depths of depression and frustration when you can't solve a puzzle are surpassed by the raptures of joy when you finally untangle it. I wouldn't regret mugging my piggybank to buy the game and it has been interesting enough to keep me awake into the early hours of the morning on several occasions.

And you can't say fairer than that.

Frankie Passed Thru Cricklewood

Amiga Computing Excellence

Operation Stealth
£24.95
US Gold

Sound
Graphics
Gameplay
Value

Overall – 83%

FUTURE CLASSICS

Originality revisited

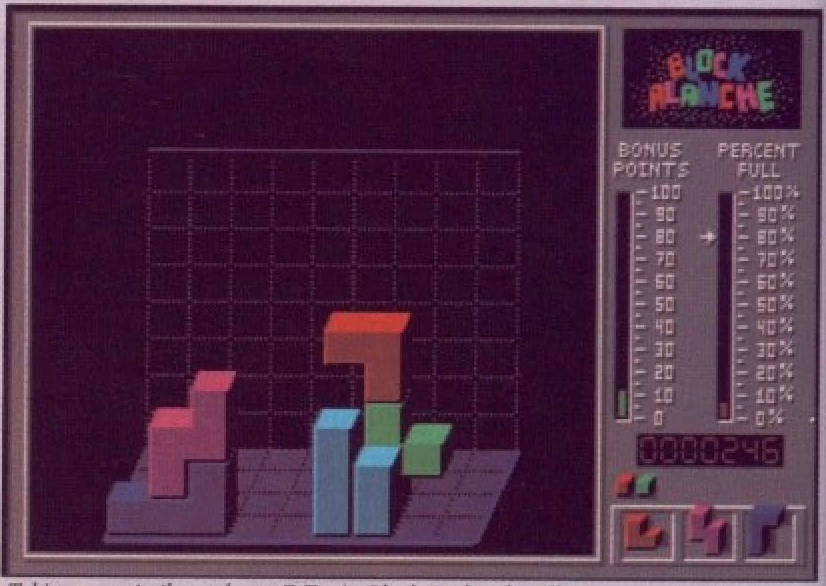
SO WHAT does the future hold? Perhaps Russel Grant can help, but what about computer games: What will be a classic in five or six years time? Products like Dungeon Master, Xennon and Blood Money spring to mind, but those games that are already classics, what will have happened to them?

Live Studios have the answer here. Future Classics is the revival of games past, such games that were tops in the early eighties when electronic entertainment was all the rage. How many of you can remember 3D Monster Maze on the ZX81? How many of you remember the ZX81? You'll all know Pacman though and will be even more familiar with Tetris. So far you will be getting the gist of Future Classics.

If it sounds boring, you're right it does. I mean what's the point of re-releasing stuff that's seven years old if it's a day? Well, of course it's had a little spice added to it just to beef it up but isn't still mutton dressed as lamb?

(Hold on a moment, young Banner. Although I hate those dreadful interruptions from editorial staff, I feel I have to interject here to say that 3D Monster Maze on the ZX81 was one of the all-time great computer games - Aj)

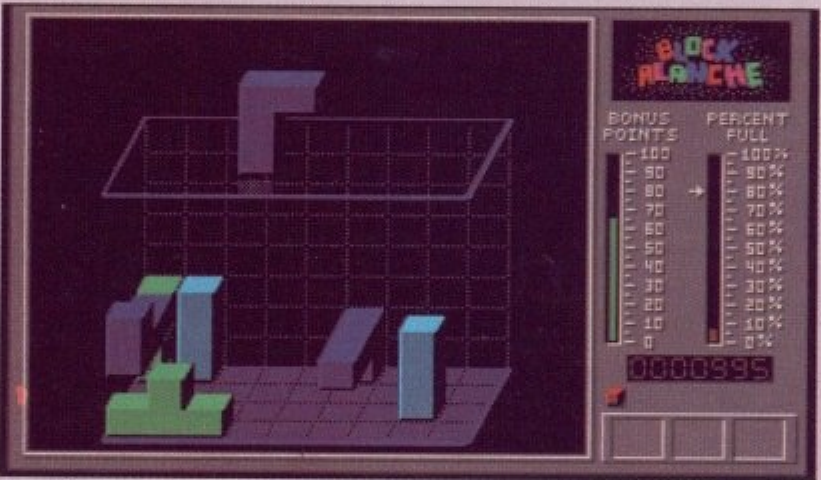
The honest answer to that is no. Sure all of the games have already done the rounds in one form or another but now they're back in a form which you've not seen before. Future Classics is also quite unique in it's play methods. I can't say that I've ever found a game before that allows so many different methods of play. In it's most basic form, each game can be played by a single player. Expanding upon that you can get a friend to take control of the keyboard or second joystick and play together, either against one another in competition or in conjunction. If you've not got a friend (and let's face it, you are a boring SOB!), Future Classics provides you with a partner. Three computer personalities are included for you to while away the hours. Two player games can take place using a split screen method so that play can be simultaneous.



Taking on a similar style to 3D Tetris, Block Avalanche offers infuriating gameplay to those who can stand the heat!

Future Classics contains five games; Diskman, Diet Riot, Tank Battle, Blockalanche and Lost 'n' Maze. Both Diskman and Diet Riot are loosely based upon Pacman, in that they are plan view games with something chasing you. Diet Riot sees a obsessive slimmer in an environmental quest to close all the fast junk food joints in town. This is achieved by collecting all the food crates and dumping them in the trash whilst avoiding the various chunks of tasty menu morsels which endeavour to fatten you up. Unfortunately, the fatter you get the slower you move and the faster you are on your way to a coronary. So to work off those calories with speed, clamber on to the gym equipment and lift those weights.

Diskman involves a man and his quest to save his data from total corruption by destroying the computer viruses while Blockalanche is yet another version of the popular



A simple game, but addictive none the less



An overhead game a la Pacman, making sure you collect the disks as you go



Running around Maze is furious at the best of times, but watch out for those balls

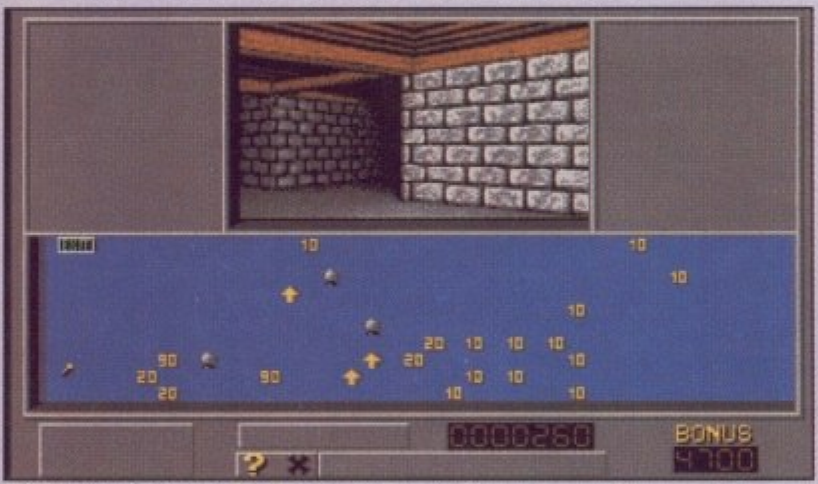


You're overweight and there's only one way to conquer it – Diet

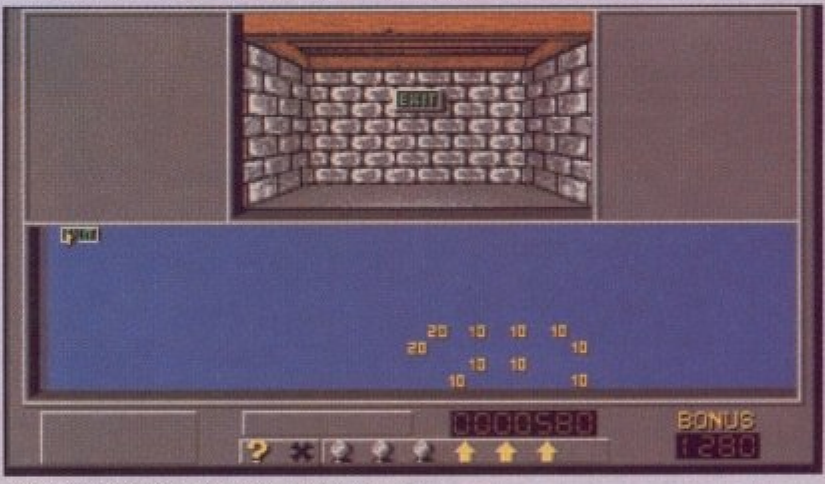
Value



You begin the game as thin as a rake, but too many collisions with the pizza will see you burst at the seams



Viewed from first person perspective, Lost in Maze will have you searching for treasures beyond belief



After being lost in the tunnels for hours, you eventually stumble across the exit – phew!

Tetris game (a game which I find terminally dull). However, Blockalanche adds a new dimension, displaying the screen in 3D and allowing you to select which blocks will appear, you can even position them before they drop. Lost 'n' Maze is a re-run of the ever popular 3D maze, find the exit game and Tank Attack is a 30mm armoured vehicle shoot out from the days past.

Future Classics is simply a product which is well overdue. There are few original game being released today so I see no reason why even older style games should be forced into oblivion without digging so deep into the past you come up relics like Space Invaders. Although Diskman is a little ropy, Lost 'n' Maze is great fun as is Tank Attack. There's nothing wrong with a little nostalgia every now-and- again.

Andrew Banner

Tank attack is basically a modern version of the old V.C.S. game, Pong!



Future Classics
£24.99
Electronic Zoo

Sound
Graphics
Gameplay
Value

Overall – 78%

Choices to Keep yo
...at Truly Wizar



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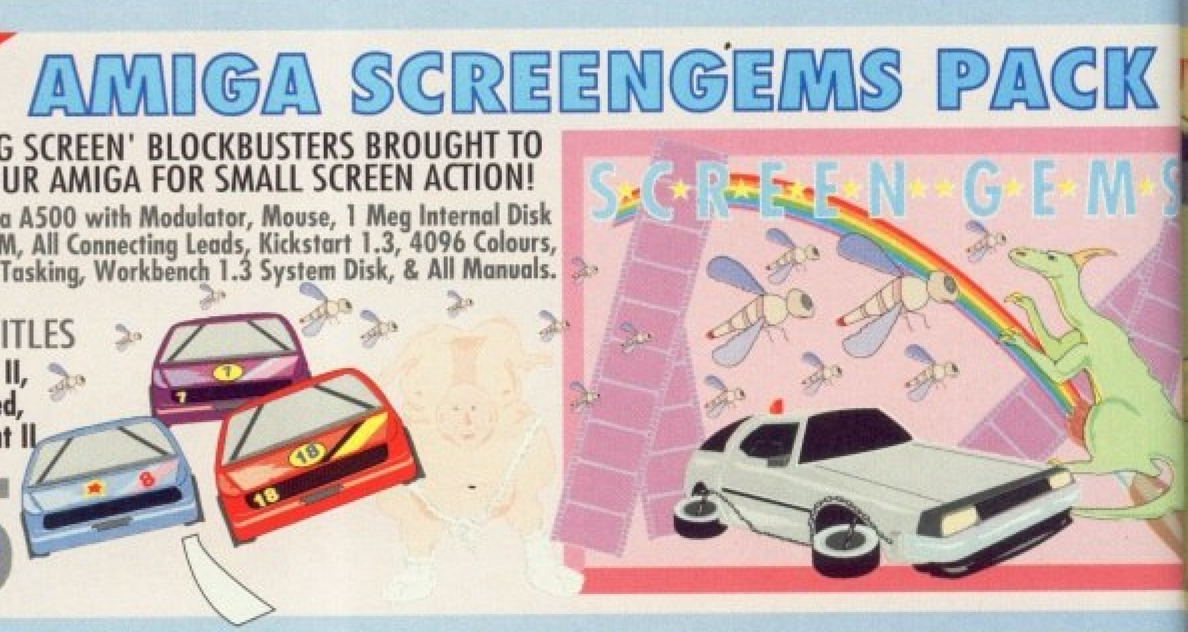
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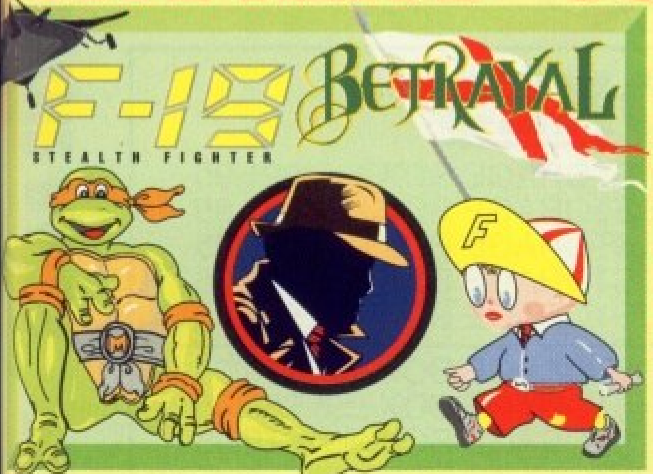
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THE DISK



SWIV DEMO

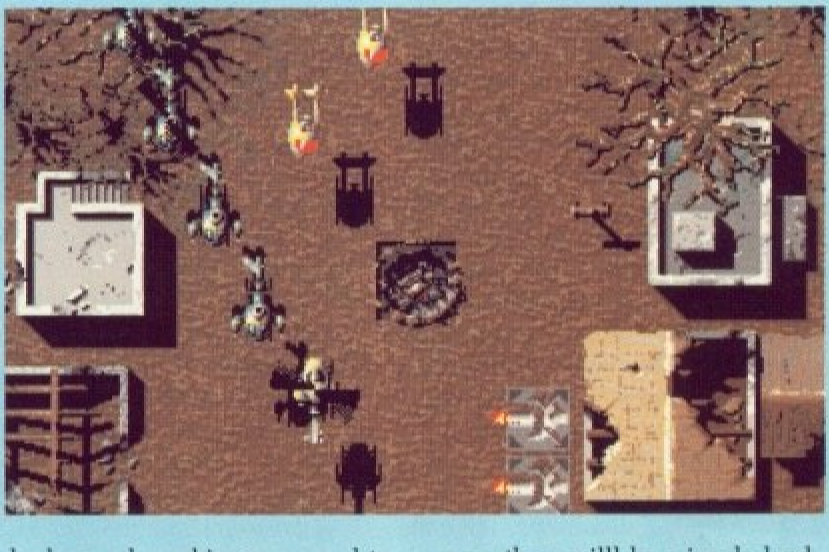
BACK at the start of this year when the guys at Random Access saw Battle Squadron being hailed as a better shoot-'em-up than Xenon 2, they vowed to write an even better one. It was to be the sequel to Silkworm and would be called Silkworm IV, "because it'll be four times as good."

At that time nobody took into consideration that Silkworm was an arcade license, which meant that if Random Access wanted to use the name Silkworm, it would cost them, despite the fact that Silkworm IV would have been a totally original game, not a coin-op conversion.

I'm telling you all this so you understand where the name SWIV came from. SilkWorm IV – SWIV. Got it? Good.

Out on the Storm label in November, by the way.

This SWIV demo has been specially programmed for you. It's not the first level, or anything like that. What you've got are the opening



background graphics re-mapped to show off some of the features from later in the game.

SWIV doesn't have levels – it's one continuous vertically scrolling landscape with 12 intermediate enemy installations where the scrolling stops until you've zapped everything in sight. After each installation has been wiped out, the landscape changes. In the full game there willl be a jungle landscape, an icy wasteland, a space graveyard, a science fiction landscape... I don't want to spoil it for you, so I'll stop giving the game away.

The demo is single player: the game itself will be one or two player.

You'll start off with one player in the helicopter and the other in the jeep, but at some time during the game you'll be able to change vehicles so that you can have a two-chopper or two-jeep game if you like.

There's very little thinking involved in playing SWIV. The idea is simply to blast your way from one end of the game to the other, leaving behind a trail of destruction.

There will be several power-ups to collect, and it will be important in certain places which power-up you take on board.

An expert player will take 40 to 50 minutes to finish the whole game, depending on how long it takes to finish off the intermediate installations, so it'll be no mean feat if you get to the big end of game sequence, which is really something special and a trademark of the Random Access development team.

You don't need any instructions to play this SWIV demo: Just plug in a joystick.

Cribbage

CRIBBAGE is an old English card game, said to have been invented in the 16th century by Sir John Suckling. It is a refinement of an earlier card game called Noddy.

To start the game, double click on its icon. When the main layout appears you will see a scoreboard at top-left. Computer is blue, you are red.

There is a grey box at top-right showing how many games have been won by each player and an orange box at top-centre showing the total value of the cards which have been played.

The green box on the left holds the cards in the crib. This also indicates (at the top of the box) who has the crib. The crib alternates after each hand. The large box to the right of the crib holds the cards during play. The white box on the right holds the computer's cards, the blue area below the crib box and the play box will hold your cards.

There is a gadget marked REVEAL OFF underneath the box which holds the computer's cards. Use this if you want to cheat during play.

Prompts and messages are displayed in the box at the foot of the screen.

The game starts with a question: Do you want muggins rules? If you choose "Y" you will have to add up and declare the score in your own hand yourself.

With muggins rules switched on you must input your score using the up and down arrow keys, then hit Return. Your opponent (the computer, in this case) will decide what *it* thinks your score is. If you have omitted to score something, the computer will draw your attention to it and score those points for itself.

In a game between two humans this action is accompanied by a ➤

Source code

THE source code for Cribbage is on the cover disk in the Cribbage drawer in a crunched format. It can be examined by double clicking the Cribbage.BAS icon. Select the Print gadget when viewing to get a hardcopy.

Should you wish to play with or customise the listing, you will have to decrunch it first. The program for doing this, Decrunch, is in the C: directory of the cover disk.

loud cry of "muggins" so everyone else in the room can hear.

If you are new to Cribbage you should not play muggins rules until you are comfortable with the scoring system – the computer will automatically add up your score for you.

Next we cut for deal. In this implementation of the game, whoever cuts lowest wins the deal and the first crib.

Six cards are dealt to each player. Yours will be displayed on the screen face-up, but the computer can't "see" them. Your first job is to discard two cards into the crib.

The dealer may not look at the crib yet, but at the end of the game any scoring combinations it contains count in his favour. So before we go any further with the rules, you need to know what scoring combinations are allowed.

The order of cards in each suit runs from Ace (low) to King (high). Each card has a point value equivalent to the number of pips on its face. The court cards count as 10 each. The scoring combinations and the amounts they score are as follows:

Fifteen: Any two or more cards totalling exactly 15, score two points.

Pair: Two cards of the same rank, score two points.

Three of a kind: Three cards of the same rank, score six points.

Four of a kind: Four cards of the same rank, score 12 points.

Run: Three or more cards in sequence, score one point per card.

Flush: Four cards of one suit in the hand, score four points.

Flush: Four cards in hand and start card of same suit, score five points.

Some examples of a fifteen are 7-8, 5-Q and 2-4-9.

A hand containing 2-4-4-9 would count fifteen twice, once for 2-9 plus the first 4, and again for 2-9 plus the second 4; the hand would also score two for the pair (six in total). But a hand 7-4-4 counts fifteen only once because the two 4's must be used once together instead of once in each order to make up the total. They still count two points for the pair, of course.

If a player's four hand-cards are of the same suit, he may peg four points for the flush, or five points if the start card (see below) also matches.

A score is credited for each different combination of cards that can be made. Any individual card may be used in different combinations or more than one of the same type. So a hand of 7-7-8-9 is scored cumulatively as follows: Fifteen 2, fifteen 4, pair 6 and two runs of three 12. Note that the 7's not only count together as a pair, but also can each be used in turn to score two different fifteens and two different three-card runs.

So that's the points system, now back to the game.

After the discarding, the non-dealer cuts the pack and the dealer takes the top card of the bottom half and lays it face up on the top. This card is known as the start card. If it is a Jack, the dealer immediately pegs "two for his heels".

Before any combinations are scored, a little game of cat and mouse is played with the four cards each player is holding.

Starting with the non-dealer, each player in turn plays one of his cards face up in front of himself. As each card is played, the cumulative total of the cards played so far is displayed. If either player adds a card which forms a scoring combination when considered in conjunction with the previous card or cards consecutively played, he is entitled to peg the points value for it. For example:

Non-dealer plays a 4; dealer plays a 6 making the count 10; non-dealer plays a 5 making the count 15, at which point he pegs two points for bringing the count to 15, and another three points for forming the three-card sequence 4-5-6, even though they did not actually appear in that order.

If the dealer now adds a 3, he would score four points for a run of four, extending the sequence to 3-4-5-6.

Flushes do not count in this part of the game.

The play continues so long as neither player brings the combined count above 31. If you cannot add a card without exceeding this total, you must pass by clicking the GO button, whereupon the computer must add as many cards as it can without exceeding 31.

Whoever plays the last card pegs one point, or two if he brings the count to exactly 31.

If either player has cards left unplayed, those played so far are turned face down and a new series is played with the remaining cards up to 31 as before, the first card being led by the opponent of the player who played the last card in the preceding series. If this still fails to exhaust all the cards, yet another series is started. And so on until all the cards in each player's hand have been played.

Now we get the main scoring round. Starting with the non-dealer, each player scores for any combinations his hand contains, considering the start card as if it were part of his hand. Whoever holds the Jack of the same suit as the start card pegs "one for his nob".

After the non-dealer counts his hand, the dealer does the same. Lastly, the dealer turns up the cards in the crib and scores it as if it were yet another hand, again counting the start card as part of it.

As soon as one player reaches the target score of 121 (twice round the peg board), play ceases and that player has won the game.

Tactics

WHEN presented with your six cards, study all permutations to see which four cards will give you the best score. Remember that there is a fifth card, the start card, to be taken into consideration. You will only see this once you have discarded two cards, so you will have to use educated guesswork (luck) here. Assume the start card will help your scoring.

Also take into consideration who has the crib. If it is the computer's crib, try not to throw it too many points. Giving it a pairs of 5's would be close to disastrous.

Unless you cheat (by selecting Reveal On) you will not know what two cards the computer discards.

If you play first, avoid laying a 5 or a 10. Chances are the computer will have either of these also, to make a total of fifteen and peg two points. Watch out for the computer playing first.

If it plays a 10, chances are that it also has a 5, so if you lay a 5 you will get two points for fifteen and the computer will pair it off for two points itself.

Try to avoid making the count reach 21 because the computer may hold a 10 or a court card to peg two points for 31.

The computer will try very hard to make runs during play, be aware.

THE DIS

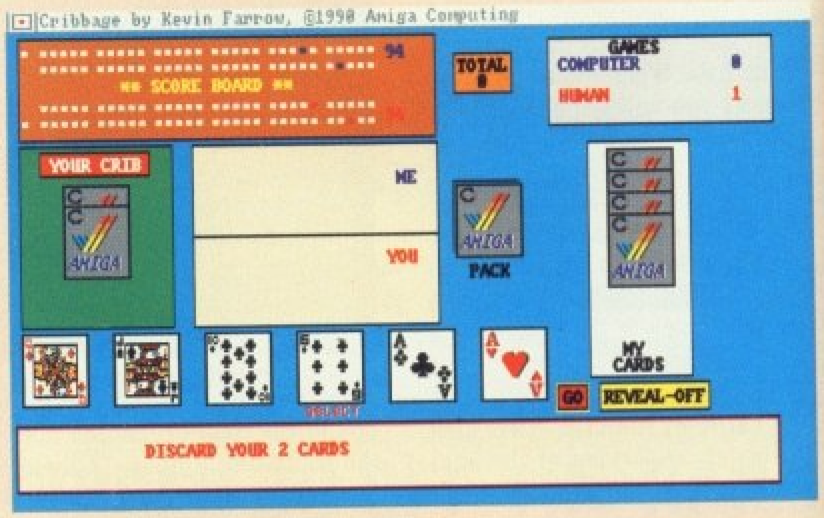
512k users

THE first thing Cribbage does on running is open a couple of large, med-res, four bitplane screens. It therefore requires a fair amount of memory. The game has been tested on a vanilla A500, booting from the cover disk, and it runs perfectly well provided all other windows are closed before double clicking its icon.

If Cribbage fails to run and you get an error requester, close down all windows except the Cribbage drawer one (including the main disk window), type endcli into the CLI window, drag the Cribbage icon on to the workbench and then close down the Cribbage drawer window.

Cribbage will now run correctly on a vanilla A500 without problems, unless, of course, you have run something else previously which hasn't given back all of the memory it was using.

CRIBBAGE was written in HiSoft BASIC by 29-year-old Kevin Farrow. This program, plus its support files and documentation, is Copyright ©1990 Amiga Computing.



VirusX 4.01

IT is a sad fact that more than half of the floppies I get sent with cover disk contributions on are infected with viruses. Mostly Lamer II. There's no excuse for it these days,



what with a dozen or more very good virus protection systems around, all of them free.

The most famous is Steve Tibbet's VirusX, and here's the very latest official upgrade, version 4.01, direct from Canada.

A lot of changes have been made since 4.0, although experienced VirusX users will only notice one difference in operation. The most important change is that the program is now compatible with AmigaDOS 2.0. New users stay around for a wh ile and I'll explain the best ways of using the program. See the release notes on the cover disk for all the details.

By far the safest way of using VirusX is to launch it from your startup-sequence somewhere just before LoadWB. VirusX first checks memory to see if anything is there that shouldn't be there, then it will open a small window on the Workbench title bar and sit in the background twiddling its bytes until you stick a disk in any drive, whereupon it will check the boot-block of said disk and report on what it finds.

If this is what you intend to do, and I strongly suggest you do, then make sure you copy the VirusX program into the C: directory of your everyday boot-up disk.

The one thing VirusX can't check for are viruses that attach themselves to files. Which is why another program, KillVirus (abbreviated to KV), is distributed in the package.

Again, you should copy KV into the C: directory of your boot-up disk so the command is available if you should need to use it. Unlike VirusX, KV cannot be run from the workbench, which is why there is no icon for it in the VIRUSX401 drawer. Double click on KV.DOC for details of how to use KillVirus.

The full documentation for the previous release of VirusX is on the disk and is all relevant to the current version. See the 4.01 release notes to find out about the new extras.

Keep cool

SOME programs, notably those that create recoverable ram disks, take over the Amiga's CoolCapture vector for their own use. If you are running such a program, like RRD for example on last month's cover disk, then VirusX will immediately warn you that the CoolCapture vector is not zero.

Alas, some viruses use this vector to hide themselves and stay alive through a warm reboot, but if you are sure that your CoolCapture vector is being used by something you are running and not by a virus, then it is quite safe to click "No" when VirusX asks if you want to reset it.

You can prevent VirusX from checking the CoolCapture vector by using the -c option in the command line.

VIRUSX 4.01 is freely distributable but remains Copyright ©1990 Steve Tibbet.

Marilyn

THIS WILL get the old blood corpuscles racing round the arteries – a moody little ditty called Marilyn by Steve Cooper of Rochester in Kent.

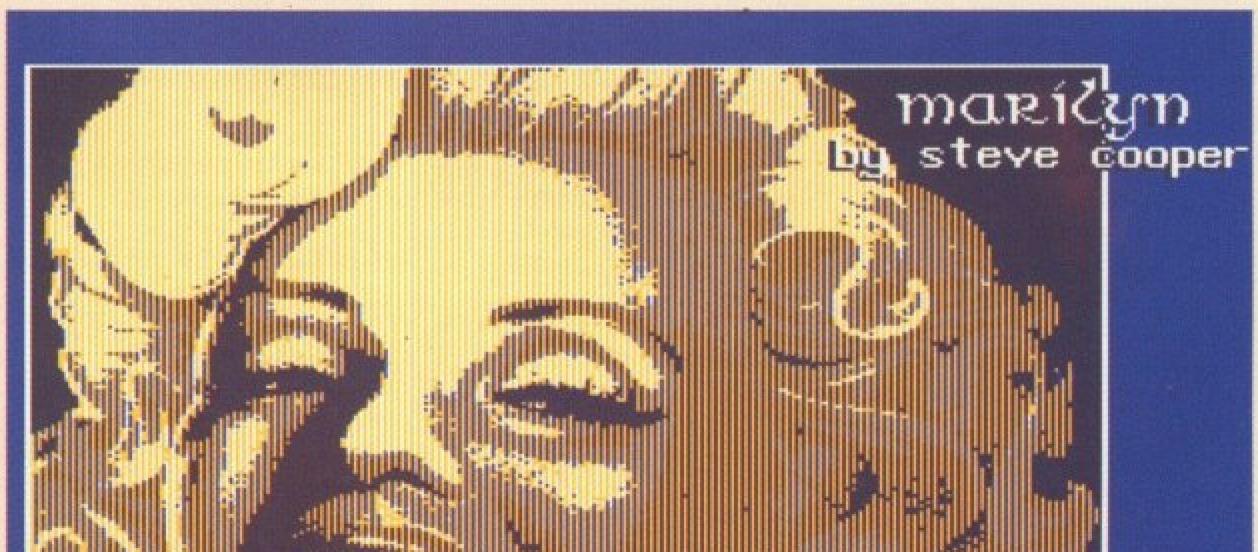
Steve uses Noisetracker v1.0 to create his tunes. He's a self- taught musician, playing drums and guitar, and has been 'tracking for 18 months or so now. After a day working in the local Nursery (that's little plants, not little pests) Steve likes nothing more than to sit down at his A500 and create tunes using his own sound samples.

The tune we have here uses fairly standard samples – experienced 'trackers will no doubt recognise one or two of them – but Steve also produces compositions he calls "soundscapes" made up of synthesised animal noises and snatches from films.

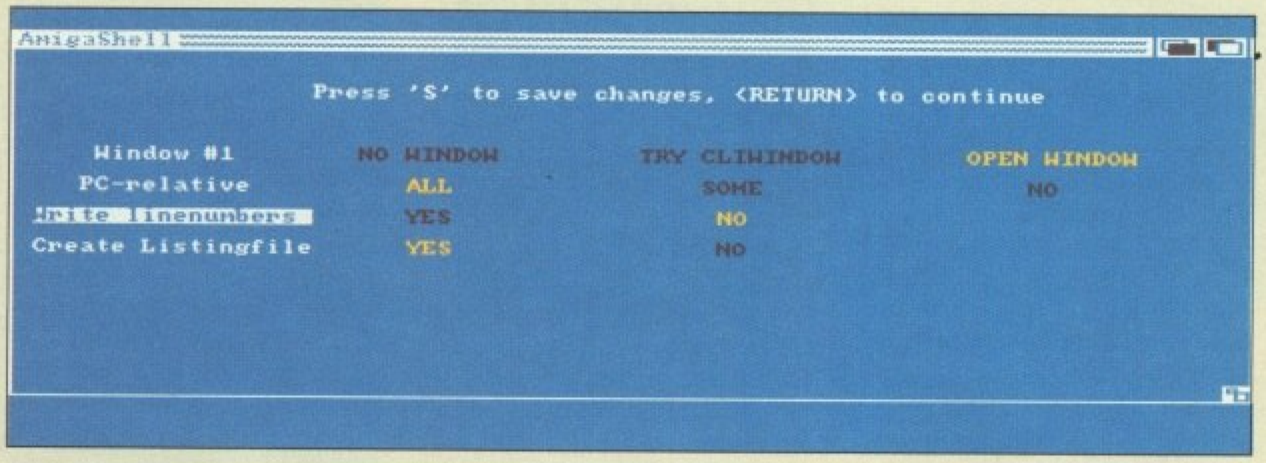
Marilyn, on the other hand, is an excellent example of how to create a really together tune using very few samples. A pulsating bass line plus clever slide and echo effects on the guitar solo show off Steve's expertise with Noisetracker. One or two people I've played it to reckon the female gasp spoils it, but I guess that's just a matter of taste.

Are you a budding musician looking for fame and fortune? If so, perhaps the Amiga Computing cover disk can give you a little push up the ladder. You never know who might be listening to your music. For instance, Howie Davies got commissioned by a software house after Rock The House appeared on the cover disk.

Original or classical stuff only please, preferably in self- contained modules. If you insist on sending executable tunes, then try not to send the kind that freezes the mouse pointer or uses the left mouse button to quit: Right button or both is better.



Cursor v1.1



CURSOR takes programs that are written for the AmigaBASIC interpreter and turns them into programs that can be run directly from CLI or Workbench.

In doing so it compiles your BASIC programs into machine code, which means that the resultant program will run faster than the original. Not all the AmigaBASIC keywords are implemented in this version, although most are. For a full list of supported commands and functions look at the file Keywords.DOC in the Cursor drawer.

The best way to use Cursor is to copy it into the C: directory of your boot-up disk. If you're still working from a bog-standard Workbench disk you'll need to make some room first by deleting some of the things you don't use very much.

You must also copy the file bas_runtime.library (in the libs directory of the cover disk) into the LIBS: directory of your boot-up disk. All programs compiled with Cursor need this library to be present in LIBS:, and so does Cursor itself. Cursor also needs the four maths libraries: mathffp.library, mathtrans.library, mathieeedoubbas.library, and mathieeedoubtrans.library, which must be in LIBS: or in rom (mathffp.library is in rom on 500s and 2000s).

Cursor is best operated from the CLI – although it is quite feasible to IconX it if you want – by supplying the name of the BASIC program as the parameter. If Cursor finds no errors it will create an executable file whose name is that of the source file without its extension.

If you boot from the cover disk you will be able to play with Cursor straight away because everything is where it should be.

After the cover disk has booted drag the CLI window up to the top of the screen and open it to its full height. Then type:

```
cd cursor
```

to get into the Cursor directory. If you're curious, use Dir to see what files are there. You'll see a few example programs with .BAS extensions. The one we're going to use displays a list of prime numbers. So type:

```
copy primes.bas ram:
```

You can work from floppy if you want, but it's quicker from ram. Now we've got our BASIC program where we want it, type:

```
cursor ram:primes.bas
```

Cursor will load and decrunch, then a copyright message will appear followed by the filename ram:primes.bas automatically supplying itself to the prompt. The compiler will then make two passes of the source code and create the program.

It takes just a few seconds. When it's finished type:

```
dir ram:
```

and you'll see three things. Firstly there is a T directory. While it is working the compiler writes some temporary files into T:, so it is best to assign it to the ram disk. The cover disk startup- sequence has done this for you.

Next there is the primes.bas file we copied to ram, and lastly the program Cursor has created, called primes. To run it type:

```
ram:primes
```

A window will open and lots of numbers will scroll past, all the prime numbers between 2 and 1,000 in fact. To finish the program at any time, click the window's close gadget.

Not very impressed, are you? Well, Primes is just a simple program to prove that it works. Now you've successfully compiled something small, go ahead and compile a more complicated program, ManSing.BAS, which is a Mandelbrot Set image generator. Although the compiled ManSing may appear to take an age to draw its image (about 40 minutes), the same thing running under AmigaBASIC takes hours and hours and hourzzz...

It is important to remember that you can only compile BASIC source files which have been saved in Ascii format, so make sure you use SAVE "filename", A in the AmigaBASIC interpreter else you'll be getting compiler error messages.

If you run Cursor without a filename as a parameter and press Return when asked for the name of the source file, you can change some options which influence the compiled programs. Actually, you can do this either in the menu that appears when you press Return after you have started Cursor, or with the OPTION keyword in the source file. The following options are available:

NOWINDOW: No window is opened automatically when the compiled program is started.

TRYCLIWINDOW: The compiled program will try to use the CLI window as a window with the number 1.

If this is not possible – for example, if the compiled program was started from Workbench – a new window is opened. You should not use graphics commands in the CLI window because you can inadvertently overwrite the window's border.

OPENWINDOW: A new window with the number 1 is always opened on the Workbench. This is the default option.

ALLPCRELATIVE: Cursor assumes that all branches in the compiled machine code program do not reach further than 32k. The compiled program will be shorter if you use this option.

SOMEPCRELATIVE: Cursor only assumes that all branches within subprograms do not reach further than 32k.

NOPCRELATIVE: All branches can reach as far as they want. This is the default option because it is the safest assumption.

WRITELINENUMBERS: The line numbers of the source file are written into the compiled programs. They will be displayed if the compiled program aborts with an error message. But the compiled program will also get bigger and run slower.

All programs compiled by Cursor are pure, and Cursor sets the pure bit of the programs automatically.

Compiled programs can be started from the CLI or the Workbench (provide your own tool icons).

Parameters passed from the CLI are treated as if the user typed them in using the keyboard after the program has started, separating them with the Return key, so they can be read and processed with INPUT statements.

If an error occurs while a compiled program is running, an error message will be written either to standard output (if it exists) or a requester will appear.

You will see additional pieces of information in the requester, like a more exact description of an I/O error or perhaps the number of the line in the source file where the error occurred.

Disk Copying!

WE always say the first thing you should do when you get your cover disk is to make a backup copy for yourself. There are good reasons for this as I'm sure you'll understand, but this month we have an exceptional case.

The wonderful SWIV demo uses a special disk format which means that a standard AmigaDOS copy command *will not work!* That's the bad news.

The good news is that you *can* copy across all other programs in the disk, just by dragging their icons.

I'm telling you this just so you don't ring up the editorial offices complaining that you can't copy the disk, OK?

CURSOR was written in AmigaBASIC and was compiled with itself. It is Copyright ©1990 Jürgen Forster. The library and small pieces of the program were written in assembler and compiled using A68k from Charlie Gibbs and BLink from the Software Distillery.

This program is freeware, which means you may use it and give it to any your friends, but you are not allowed to sell it except for a small copying fee.

Please send bug reports, suggestions for improvements, or anything else to: *Jürgen Forster, Lintheide 9, 4800 Bielefeld 17, West Germany.*

If he gets enough feedback from you Jürgen may well implement the few commands and functions Cursor does not yet support.

AMIGA COVER DISK

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WE are always looking for original contributions for the *Amiga Computing* cover disk. If you think something you have written is good enough to share with everybody else who reads the magazine, send it along and we'll have a look.

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Please let us know which files, if any, your submission needs from the Workbench disk. If it is clickable, feel free to design an original icon. But don't make it too large. And please use the standard Workbench colours.

Bear in mind that a program which does not run on a 512k machine would have to be exceptionally good to make it on to the disk.

Amiga Computing will buy your work on an all rights basis. We are not prepared to pay for programs which are already in the public domain or have been spread by other means. However we are quite prepared to launch your program into the public domain as either freeware or shareware if that is what you wish.

Please enclose this coupon, or a photocopy of it, with your submission. Include a file on the disk with full documentation, your name, address, phone number and a few details about you and your kit. A photograph of yourself would be nice, but isn't essential.

Don't forget to duplicate on the disk label the program name, your name, address and phone number. If you want your disk back, enclose a self-addressed, stamped envelope.

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Earth calling Cheshire

As Jodrell Bank has been keeping an eye on the universe, an Amiga has been keeping an eye on it. Joe Garner investigates how an A500 has become an interstellar graphics terminal

JODRELL Bank is *the* place to be if you're into radio astronomy. I went there, just off the M6 at junction 18, as a visiting student partly because I was interested in the image processing that's involved in making all those pretty, false-colour piccies that Patrick Moore gets so excited about.

"Basically, we run a VAX cluster", said Paul Harrison as we walked into the terminal room, "but there's all sorts of other machines tied into it. We've got terminals left over from Systime days. About half are text only, most are monochrome. Over here are our two graphics work stations...."

I missed what he said next, because over on the bench, looking battered and well worn, was the familiar form of a lowly A500, and sitting next to it was a huge 1024 pixels by 740 Ikon monitor with a false-colour Quasar on its screen.

Both light and radio waves form part of the electromagnetic spectrum, differing only in their wavelength and frequency. With the naked eye, we can see only in the "optical" wavelengths, though many insects can see in ultra-violet and infra-red.

Going up in frequency (and down in wavelength) from the visible you have ultra-violet rays, X-rays and Gamma rays. Going down in frequency (and up in wavelength) you get radio waves.

The advantage of looking at things in the radio wavelengths is that the waves pass more easily through dust than light, making objects easier to detect. You can also tell what atoms make up the object, and basically "see" in greater detail than with optical telescopes.

Enough of all that. You want to know about computers, so I'll tell you about computers. Like all science in this country, Jodrell is incredibly under-funded. As a result they work to an "if it works keep it"philosophy.

THAT means that the main telescope (Mk 1a) is still used with the original 1955 analogue computer, though the hard work is now done with a digital machine. But it works: The motors driving the dials on the front have to be replaced more often than the valves that glow away to themselves in the heart of the machine.

In those days astronomy was a graph paper and ruler affair. Nowadays most astronomers would give up without at least a Vax to work with.

Why the change? Well the bigger the telescope, the finer the resolution. To the Mk 1a, the quasar I first saw was nothing but a point. And that telescope is just about as big as you can get – even so gravity stretches the telescope bowl enough to affect its performance.

The way to get round this is to tie two telescopes together using a technique called Interferometry to simulate a telescope as wide as the "base line" – the distance between them.



Before computers came along you couldn't use more than two telescopes to do this, and even then the results would be meaningless to me and you.

In Britain we have a Interferometer stretching (by the time of publication) from Cambridge to West of Jodrell. This simulates a telescope hundreds of kilometers across. The network is called Merlin (it really does stand for something) and I've been told that the Mk 1a controlling computer is called Arthur because it's Merlin's friend. I think the real reason has something to do with *The Hitch-hiker's Guide To The Galaxy*...

When Merlin was designed in the mid '70s there were no suitable computers in the world to control all the telescopes and bring the data together. So Jodrell built their own, called Circes.

They have no proper microprocessors – the CPU is a circuit board, not a chip. The most complicated component on it is an adding chip. You enter a program by selecting an address on finger-wheels, and then flicking in the binary on a bank of switches. The control program was written in Forth and then compiled.

The Micro-Circes are still in place, the only change being to replace the paper-tape reader with eproms. Each out-station (remote telescope) is controlled by a Micro-Circe which takes commands from Jodrell. The received signal from the telescope is sent back via a microwave link, cooled as near to absolute zero as possible to avoid adding noise.

NOISE is important. Often you're looking for a signal that's 10,000 times weaker than the background noise. This is where the first piece of really clever hardware comes in (these telescopes are just souped-up radios).

A new version is being built to accommodate the latest telescope, at Cambridge, add extra channels, and improve the data by about 20 per cent. It works like this:

The analogue signal is converted into a two bit binary number between ➤

0 and 3. The signal then passes on to a bank of 128 custom chips under the control of a 68010. Slightly different signals are combined once in each chip, read out by the 68010, recombined into a single value and stored in delay memory.

Each combination of two telescopes has a board like this, and the signals from each board must arrive at the same time. Some telescopes are nearer to Jodrell than others, and so signals which arrive at the same time at each telescope arrive at different times back at Jodrell.

All this is synchronised by a master 68010 board that collects all the signals in step and stores it in ram until it's needed. The reason this process is so clever is that because noise is random and the true signal is constant, by combining the signal lots of times, the random noise will cancel itself out.

On average, pure random noise will fluctuate evenly between positive and negative limits, so that if you take enough samples it will add up to zero.

As a result you remove noise and amplify the required signal. The two bit number does not affect the final value because, again, the average signal strength will be a multi-bit number.

To see what I mean, here's a very over-simplified for instance. Imagine you were timing how long it took a stone to drop 22.5 metres and it took 1.5 seconds. Fine, but what if your clock could only measure 1 or 2 seconds?

Well if you took lots and lots of readings, after a while 50 per cent would be 1 and 50 per cent would be 2, which averages out at 1.5. If you still don't get it, don't worry: The guy who's building the thing doesn't quite know what's going on either. Just remember, there are about thirty 68010s running in parallel there, so it must be good.

The results are read out by another Circe, which is due for replacement by a VAX in a month or so. This first stage is about 94 to 98 per cent efficient. The data is usually dumped on to mag tape before processing.



The Amiga makes the other equipment look over priced



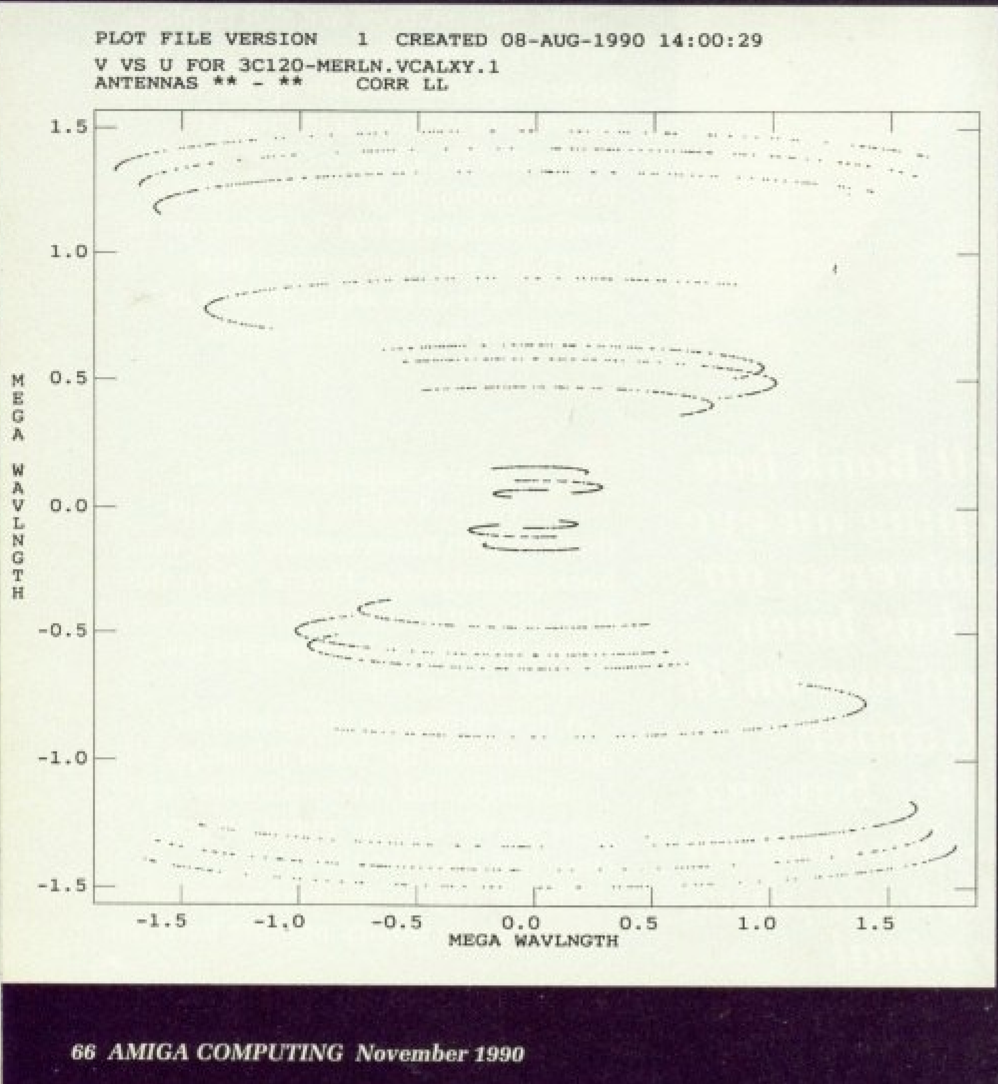
Hi there! My name is Eddie and I just know we're going to get on fine...

IN 1977 everything was run from two telexes and two terminals on a phone link to Manchester. Data was erased whenever disk space was needed, there were no graphics terminals and everyone was tearing their hair out and jumping up and down.

Then came a Systime minicomputer-cum-mainframe. A little later it was replaced by a VAX that took up a decent room-sized room. That was replaced by a VAX 3400 mainframe the size of a couple of suitcases. Now the VAX cluster contains half a dozen machines. On-line disk space is over 2500 Mb.

Storage is on disk, hard disk, video disk, video tape and mag tape for transportability. On-line VAX memory is around 200 Mb.

Before I go on about the hardware any more. I'll tell you what it needs to do. The swirly graph is a picture of the track each telescope pair traces across the sky (the receiving areas of each telescope are just overlapped on the same area of sky, so that the



This is the raw data from the telescopes. After cleaning-up it looks a lot prettier

source is trapped in the overlap).

The first job is to fill in all the blank spaces in the data. You do that by working out the way the signal is changing and use that rule to guess the value in between two known values by fitting a smooth line to the scatter-graph of readings.

Even so the picture that comes out looks horrible. This is because of the errors introduced by the inherent nature of the technique and the instruments involved. This is just like, if you squint at a light bulb,you see lines of light appear. Or, on film, a bright light may be surrounded by concentric rings.

Any radio source will appear to be surrounded by such rings. When there are hundreds of points in the picture you can imagine the mess it makes! Luckily you can predict how this will happen and then remove the mess to produce a clean image.

THREE or four years ago there was nowhere to put that clean image so that it looked pretty. So when Jodrell bought a new Alliant FX8 mini-supercomputer to cope with the number crunching they also bought an Amiga as a "crude graphics terminal" – thanks for the compliment, Dave.

Incidentally, the Alliant uses 68010/20s for I/O control and terminal handling, and the four main parallel processors use a very extended 68020 instruction set, making it the one of the fastest running computers to use a 68000 set.

The Alliant logs on under the name Zaphod (because it has four brains) and the A500 talks to it and the VAX cluster, all sharing disk space. The graphics terminal emulator ran only in 32 colours, which was odd considering that the palettes used are perfect for HAM.

On the other hand, as Dave says, it would have been nice, but they needed something straight away, and it was pointless spending any time developing software, seeing the way they expected to go hardwarewise.

Looking around, I kind of see what he means. Now the Amiga is used as the intelligent end of a two-piece graphics workstation. The other end is a high definition, 256 colour, Ikon monitor with a microprocessor thrown in as an afterthought.

So the pictures made from radio waves that had been travelling since before life on Earth began were shown on an A500. So next time you play Elite or Battle Squadron, just think, the Amiga that was next to yours in the warehouse might just be the one that's *really* been there and back!

Many thanks to Dave Shone, Tom Muxlow, Jean Warren and Paul Harrison for making this article possible.

A DOS by any other name

AMIGADOS is quite a nice DOS, despite the bugs. It's not till you use big machines like the ones at Jodrell that you realise why AmigaDOS is so polished. To put it nicely (and not get sued) AmigaDOS is a Unixclone. The Amiga's CLI is like UNIX's VMS. You find yourself trying to use CLI commands when you shouldn't.

Unix is *the* operating system used by university and scientific computers. It was developed in a university in the USA several years ago (mainly in C), and is used by just about everyone. Which is, incidentally, why a worm virus brought down a lot of Internet in the US a couple of years ago. Internet contains, among others, Milnet, ARPAnet (Pentagon networks) and NASA networks.

So where does Workbench come from? Well, just boot up a Sun workstation and you'll see. The whole concept and layout is so similar it's incredible. In fact I think Amiga window handling is more friendly.

I guess that's not too suprising, seeing how – as folklore will have it – Amiga software was being developed and emulated on Suns before the first pre-production A1000 was completed.



After extensive processing, the quasar can be represented as a false colour image like this. Note familiar window icons!

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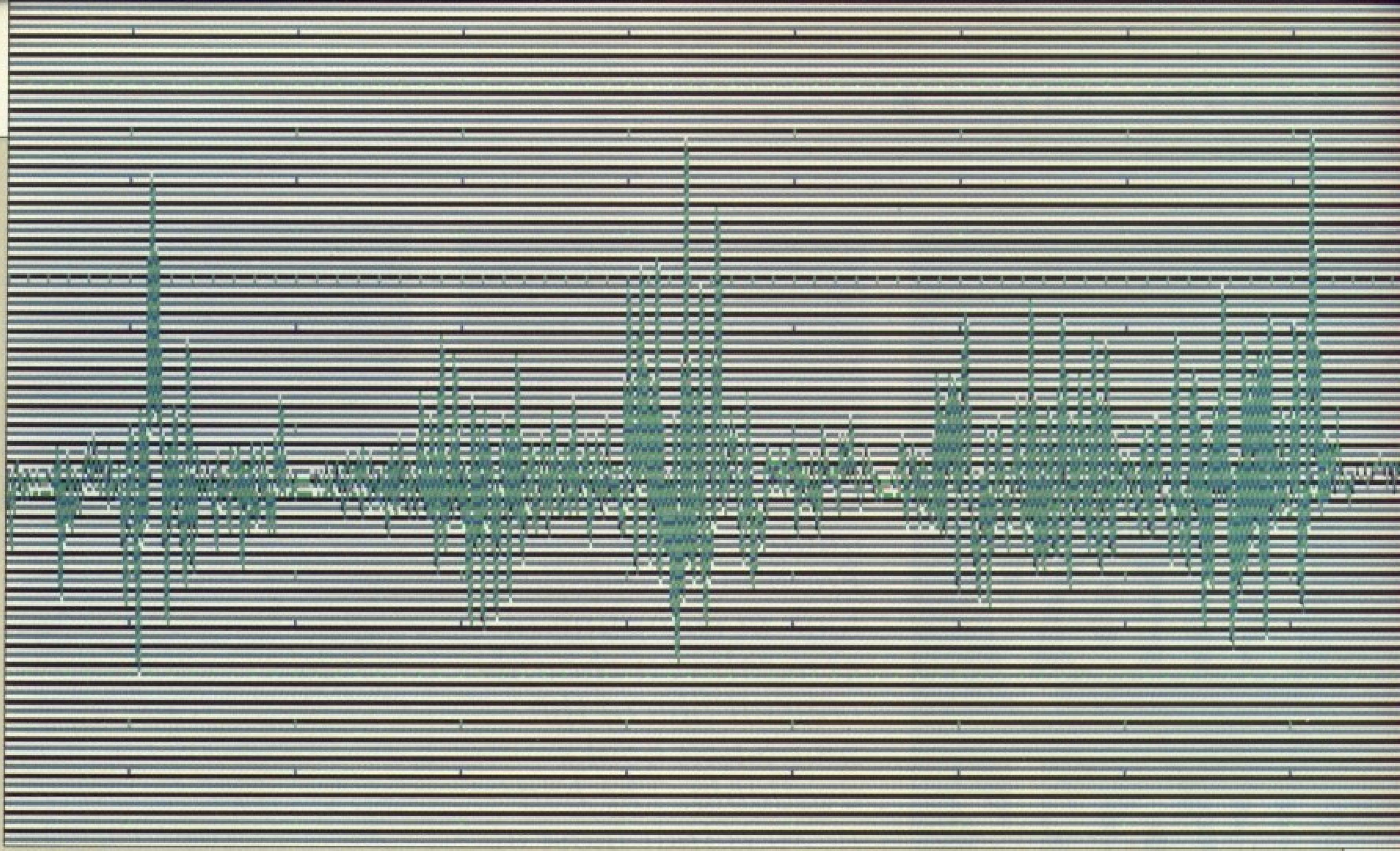
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The Sample facts

Listen very carefully? Can you hear it? It's your Amiga. It wants to make some strange noises, and only you can help it

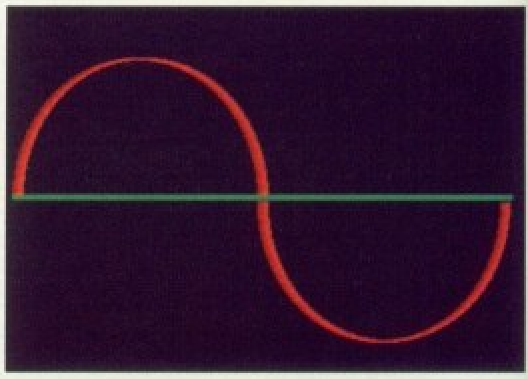
SOUND is a wonderful thing. Although it's nothing more than a consequence of living in an atmosphere which can transmit pressure waves, it forms an integral part of our lives.

So starts the typical physics school book on the subject of sound. Of course, all Amiga owners have to do is put a game in their disk drive, turn up the volume and instantly they know all they need to about sound. It's good. It's loud. And it's easy to use. All you need is a sampler and some software: The Amiga's sound chippery will do the rest.There are several things you can do with your sound samples, but the most important thing is to have fun. There is something immensely satisfying about sampling your voice and replaying it backwards at half the normal frequency.



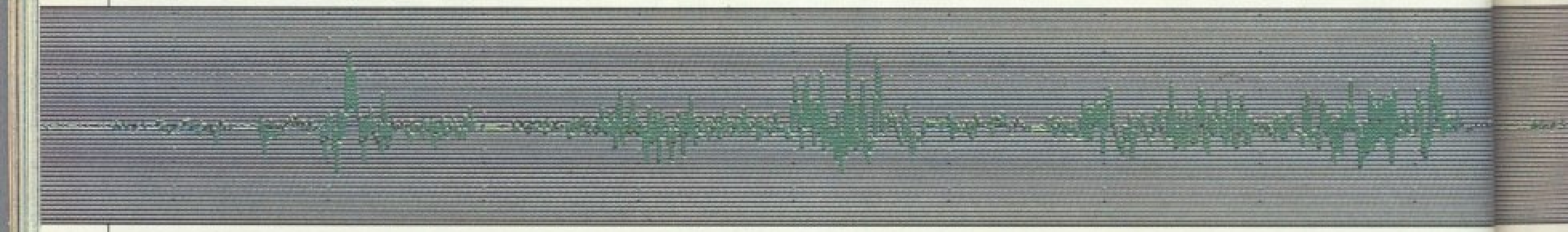
How they work

Here is a simple explanation of how samplers work, and why different sample rates make a difference to the overall quality of the sound. For a more detailed look at sampling in general, you should consult one of the many text books available. The bad news is that most of them are beyond A Level, so prepare for some nasty maths



The nice picture above is a representation of a sound, in this case a simple sine wave. It's the sort of thing you would see if you connected a microphone to an oscilloscope and played a note on a flute. Believe me, it is. It is a purely analogue – constantly varying – waveform, and there is no way that an Amiga could ever start to make sense of it.

Before you can start to play with this sound, you'll need to convert it into a digital form. To do this, you need a digitiser, *otherwise known as a* sampler.



How to use them

USING your sampler to best effect depends on three things:

- The quality of the sampler. It might seem an obvious point, but be careful – price isn't necessarily a good guide. Check the reviews in this issue.

- The quality of the software. All sampling software is *not* the same. By upgrading your software, you could drastically improve your samples. Some software will work at extremely high sample rates, which means users with accelerator cards can sample in stereo at rates of up to 56Khz. This is better than most CD players, so the results will be stunning. (Note: CD players operate at 16 bit resolution, so at the moment you can't sample better than a CD. Pay attention though, for the statement *at the moment* is likely to change in the very near future.)

- The quality of the input signal. If you record all your samples by yelling into a cheap microphone, then you can't expect them to be top notch. Best samples come from CD players, as usually the input levels are just right and of course, you don't have any pops or crackles to contend with.

What do I do now?

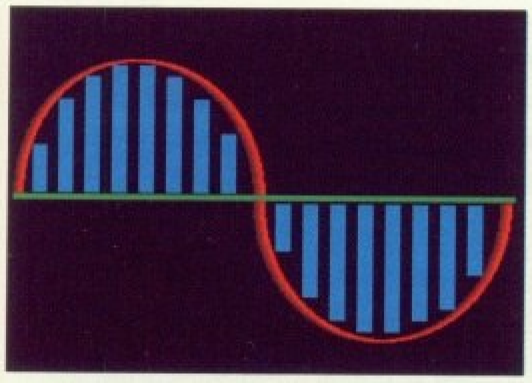
ONCE you have your sample captured on disk, you can start to have some fun.

When you get tired of making silly voices, you can load them into a sound processing package (such as TEM on last month's cover disk) and perfrom all sorts of nasty transformations on them.

When the sample is exactly how you want it to be, you can start to make use of it. The easiest way is to load it into a SoundTracker clone such as MED and compose a few tunes with it.

The more adventurous amongst you can incorporate the sound effects into your own programs. Haven't you always wanted to say "Game Over" at the end of your own game?

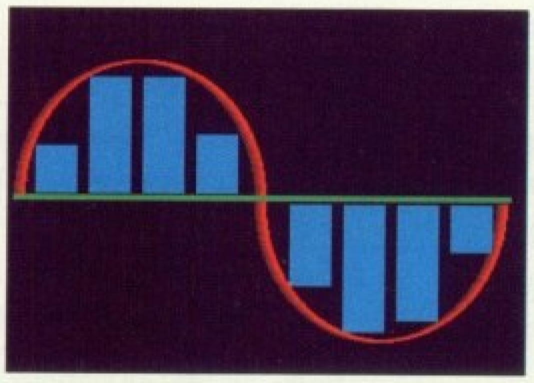
Reviewers:
Andrew Banner – Budget samplers
Jason Holborn – Audio Engineer



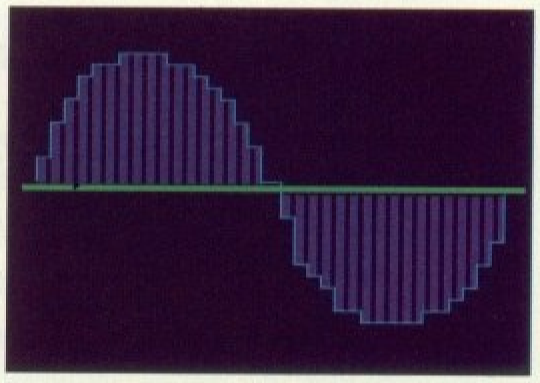
The pretty blue boxes indicate the guesses (more scientifically known as samples) which the digitising hardware has made at certain points on the waveform.

It can only work to a defined resolution, which is why the points are not entirely accurate. For example, if the Amiga worked with a 16 bit resolution instead of an 8 bit resolution, the boxes would be placed twice as accurately.

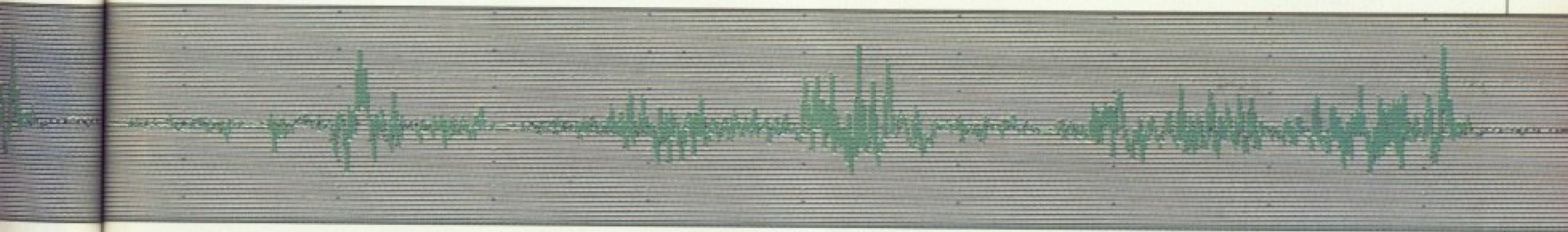
However, 8 bit samples can still sound pretty darn good, so let's not start complaining.



Now we come to the meaning of the sample rate. In this example, the boxes are a lot thicker: the sample rate has been reduced. There are less samples, and even though they are just as accurate as the previous ones when it comes to guessing the level, the fact that there are less means the Amiga has less information with which to constuct its one version of the waveform. The less information the Amiga has, the more awful the sample will sound. From this it shouldn't be hard to work out that the more samples per waveform the better.



The piece de la resistance: the Amiga generated version of the waveform. This one was constructed using a fairly high sample rate, but you can still see that the waveform is no longer nice and smooth – it now has "steps". The more samples taken, the smaller the steps, the closer the sound to the original. Mathematicians amongst you will be overjoyed to learn that Shannon's Sampling Theorum states that to digitise a given waveform, you need to sample it at a frequency of at least twice that of the original waveform. Non-mathematicians won't care.

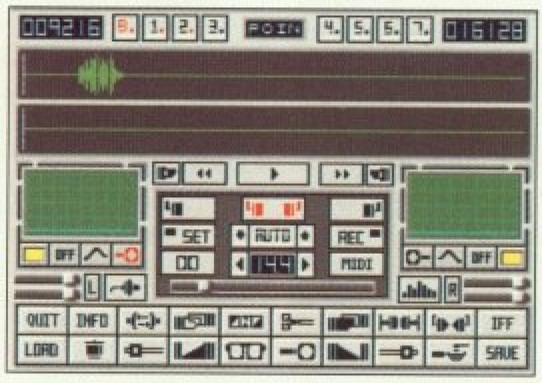


A.M.A.S.

ADVANCED Midi Amiga Sampler is the product of the relationship between Microdeal and the UK's premier sample masters, 2-Bit Systems.

The hardware comprises of a full 8-bit stereo sampler as do most of the other units, but what makes A.M.A.S unique is the built-in MIDI interface. Although MIDI interfaces for the Amiga can be picked up for about £20, it's a bonus having it built-in to the sampler as you can use it in conjunction with the sample editing software. More about this later.

The software is supplied all-in-one, that is to say that one program performs all the functions that are available. It uses a series of icons for operation and these are arranged in the lower area of the screen. Basic sample record and playback controls



are located in the centre of the screen and use the kind of symbols you would find on a tape deck so that initial operation is straight forward.

Samples are displayed in standard form along the top of the screen. Two sample windows are used in A.M.A.S, one for each stereo channel with each channel being selectable so that you can operate on it independently of the other. Alternatively, you can opt to work on both channels simultaneously.

Most of the functions, except for disk operations, are stored on "buttons" with icons upon them. My complaint here is that although some of the icons are easily recognisable and relate to the function – the fade in and filter symbols for example – others do not immediately ring a bell and so a fair bit of memory work and manual reference is required.

Although the hardware is capable of sampling up to 40kHz in stereo and 90kHz in mono, the software will only sample up to 25kHz in stereo (28kHz mono) but is capable of playing back at 28kHz. The sound quality of these samples is very good, but at 25kHz, memory is precious and this sample speed is only really suitable for short sound effects or for people with an 8Mb Amiga.

The MIDI connections to the sampler are via standard DIN type plugs and sockets while audio input can be achieved with two Phono type connections or a 3.5mm jack plug at line level for direct microphone input.

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Proprietors S.A and R.A Beech

A.M.A.S itself connects to the Amiga using two fly leads: One goes to the serial the other to the parallel port.

To obtain the correct audio input levels, the A.M.A.S software includes an oscilloscope display for both left and right channels either side of the record and playback panel on the main screen. These jump to the incoming signal, if the signal is too strong the peeks of the signals will flatten. A nice touch is the spectrum analyser display which displays the signal in it's frequency form from just 10Hz to 5.5kHz.

The MIDI functions allow A.M.A.S to be connected to a MIDI keyboard so that it may control the software. The software can hold up to 10 samples in memory (providing you've got enough) each of which can be triggered by a certain key on the MIDI synth. The samples can also be triggered from the Amiga's keyboard and up to two stereo or four mono samples can be played simultaneously.

A.M.A.S is a very good product. It's comprehensive array of features combine to provide a really good sound. Samples are saved using the standard IFF Amiga file format so that they may be loaded and further manipulated with other music software. However, no source code is supplied so that you may includes your samples in your own programs.

Techno sound



UNLESS you're really seriously into sampling and intend to do it for practical applications, I suggest you spend your money on a budget item instead of spending over £50 on something that might turn out to be a five minute wonder. At 30 quid, you can't go far wrong with this well thought out product.

The hardware consists of a small box which plugs directly into the parallel port of the Amiga. Audio input to Techno Sound is via two RCA type Phono sockets on the opposite end to the 25-way D type computer connector. Unlike Mastersound, Techno Sound is a stereo sampler which makes it a very attractive purchase.

The software is the most colourful of the lot and looks very nice. But it matters not how nice it looks, what about it's quality. Thankfully, for the most part, Techno Sound uses buttons that say what they do rather than using symbols which must be recognised. Apart from that, the buttons that do have symbols upon them are large enough to make the diagrams easy to see.

Samples can be recorded at between 5 and 35kHz and a feature unique to Techno Sound allows sound to be recorded in either 8 or 4-bit resolution. The default is 8-bit but 4-bit recording will half the length of samples but also reduce the sound quality. Samples can be made in stereo, mono or simulated stereo which sound inferior to real stereo but saves memory. Samples sound very good, with little only slight hiss.

Files can be stored in IFF or binary format for easy file transfer between software. An interesting function named RAMscan will scan memory for any sample data that may have been left there by programs previously in memory.

Techno Sound is also the only sample in this selection that has any kind of effects menu. Effects can be added in real-time to the incoming audio or to the sample in memory. Effects like echos and reverberations can make Bros sound quite pleasant. The hall effect adds a reverberation to make your sound appear as though it's in a large room or concert hall. Room adds a shorter reverb to the sound to make it appear to be recorded in a smaller enclosure. In real-time mode a final effect is available. Phaser sweeps through the sound changing tonal values vamping the sound quite dramatically.

The manual supplied with Techno Sound sports just 10 pages and only describes the functions of the software and doesn't really give any ideas on it's use. However, (another first here) the manufacturers have seen fit to include an audio tutorial cassette tape. This contains a good walk through of the software and hardware. I won't say that the recording technique is good, but the guy speaking on the tape is far too close to the microphone and if your going to listen to it through your hifi, turn the bass down!

Techno Sound provides good quality reproduction of the original sound and offers features which are not available on any of the other samplers. The sound quality, to my ears anyway, is certainly equal to that of Pro Sound Designer and Mastersound.

Mastersound

MASTERSOUND started the budget samplers trend last year when it first appeared. Although it's not a stereo sampler, it's manufacturers claim that it's probably the best selling Amiga sampler in the UK today. It's pretty easy to see why as well.

The hardware is nothing special at



all. In fact it's very limited. The only audio input connector is a mono 3.5mm jack plug. Mastersound connects to the Amiga in the same way as virtually every other sampler: Via the printer port. It's small plastic case is colour coordinated with the A500 and is finished with a sticker displaying its logo. The reason why Mastersound so popular is its versatile software.

Besides all of the usual obligatory features like record, playback and listen, Mastersound possesses something which no other sampler has: A built-in sequencer. This allows

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you to store up to 18 samples in memory (if you've enough free ram). These can be played in any order by pressing the keys that you have assigned so that you may record a sequence and replay it later.

The software is controlled by pointing and clicking with the mouse. If the icons on the buttons in the screen shot look familiar, they should. The icons are exactly the same as those used in A.M.A.S as it's the same group of people behind the product.

As with all sampling hardware, you must achieve the correct input level so that you so do not get any clipping at the peeks of the sample. Adjusting the signal input level can be done with the help of a L.E.D style peek level meter. If the signal is high it beats to the red lights towards the top of the scale. The manual suggests that you use the oscilloscope to do this, which is quite reasonable is you happen to have a sine wave generator to produce exactly the same frequency all the time. Seeing as the kind of stuff people usually record are pulsing sounds, this can sometimes be a bit unreliable. Still it's there to be used. In addition a spectrum analyser also aids your perception of the incoming signal.

Mastersound is capable of sampling from between 3.0kHz to 55.9kHz inclusive and has the widest sample range of all the products in this test. Samples in memory can be reversed so that they play backwards, but this is the only effect you can impose upon the sound.

Files can be saved in IFF and IFF instrument formats in one three or five octaves so the sounds can be readily loaded into other popular music packages such as Aegis Sonix. Alternatively, the sample data can be stored in it's purest raw data form however information such as the sample frequency is not stored in raw file mode.

The sounds recorded by Mastersound are of a high quality. Apart from being mono, which really doesn't make a great deal of difference with 8-bit samplers anyway, Mastersound is a really good package. It offers a comprehensive range of features which are unsurpassed at this price. It's ideally suited to someone who wants to dabble, and includes software to enable you to play samples independently of the main editor software.

Pro Sound Designer Gold



PRO Sound Designer is the sloppiest looking unit out of the lot. The hardware is unlabled and styled in a repulsive grey plastic case. Apart from this, it is poorly designed and sits at right-angles to the Amiga. Because the ports on the A500 are recessed, an extender socket is a must as you can't connect it otherwise. Of course, such an extender is supplied. Audio input is via a 3.5mm stereo jack assembly.

Another complaint I have about the package is the manual. Although it's well written, it's not too informative because of the cost cutting layout technique. The documentation covers too many versions of the product (Pro Sound's available for the ST as well) and though it's not difficult to sort out which bits are relevant to your version, it would be nice to have a manual for each computer rather than one trying to explain the ins and outs of both.

Another point is that it keeps referring to Figure 2 to show which button does what instead of showing the symbol next to the section where it's function is described. Later in the manual this system is employed and it makes operation a lot simpler not having to keep turning back through the manual.

You've probably already realised that, like all the other products in this article, Pro Sound uses the button operation technique using symbols for identity. In fact, I hate these symbols. Many look so similar with only a slight difference so it's all too easy to press the wrong button. However, this is true of all of the products in this round-up.

Pro Sound Designer Gold is a stereo sampler however it cannot display both left and right channels simultaneously – but this is no great loss. The beauty of it is that because the Amiga has four channel sound, Pro Sound allows two stereo samples to play at the same time. If you're clever with the recording system, you can even have four mono samples playing together.

Pro Sound will allow samples to be taken between 1kHz and 28kHz inclusive. Samples at 28kHz sound OK but are not brilliant. Invariably samples taken from a stereo source sound better when recorded in stereo and mono sound better when recorded in mono.

Samples are stored as standard IFF files so that they can be loaded directly into standard software for further sound manipulation. If you prefer you can save the sample in raw format to save space. Basic functions allow you to cut and paste sample chunks with relative ease using the magnify function which give an expanded display of the sample so that cursor positioning is easier. It is possible to double the sample's length which usually increases the signal to noise ratio to provide a better sound. Similarly you can halve the sample using another function which has the opposite effect.

MIDI capabilities are included in the Pro Sound Designer Gold package in the form of a separate program, Pro Midi. However the package does not include a MIDI interface and so more money will have to be spent in obtaining one. Non-MIDI folk can still use this software as you can trigger sounds by pressing assigned keys on the Amiga.

The software includes a variety of sampled instrument sounds which you can sequence together using a MIDI synthesizer or the Amiga's keyboard. Naturally you can sample your own sounds and then use them instead of those supplied.

Pro Sound Designer Gold is a versatile package. I don't think the sound quality is up to that of A.M.A.S but it is a bit cheaper and offers a wide range of features.

Stereo Sampler MkII



THE Stereo Sampler II is supplied in two forms: With sampling software or without. The software that is sold with Trilogic's second version of it's sampler is Audio Master II from the now defunct Aegis. However, this is an an extra 75 quid.

Now there's absolutely nothing wrong with Audio Master, in fact it's probably the best sampling software about but it's expensive. If you are going to buy Trilogic's sampler, I suggest you pick up some of the basic sampling software from one of the numerous public domain libraries and then use the fabulous TEM from September's cover disk.

When supplied on it's own, Trilogic also give you a disk of commercial demonstration software including Audio Master, Perfect sound and Future Sound. Being demonstration versions, the software is fully featured and operational, there is just no save facility to store your data. Therefore it allows you to decide which package you would like. Whichever one you choose, if any, you can be sure that it's going to cost you a lot more than PD software.

The hardware itself, life all the others, plugs into the printer port of the Amiga and as such completely disables parallel printing capabilities. Stereo Sampler II overcomes this with an optional add- on. The sampler itself has a through port on the top which connects to this separate unit which, in turn, connects your standard printer lead.

There is a good reason why this through port is possible though. All the other samplers have been developed with software and so the costs are far greater, Stereo Sampler Mk II had not been produced in conjunction with any software engineers and so the costs are, essentially, low. Because of this, more work has been put into the hardware. This facility allows the sampler to be connected at all times and so saves annoyance in having to fiddle at the back of the Amiga and also saves on wear and tear on the printer port. For the self same reason,

On the top of the sampler is a knob which regulates the input signal strength which comes in via a mono or stereo 3.5mm jack plug on the side. Using the Audio Master demonstration software produces a good, clean sound but Trilogic has left the software option open.

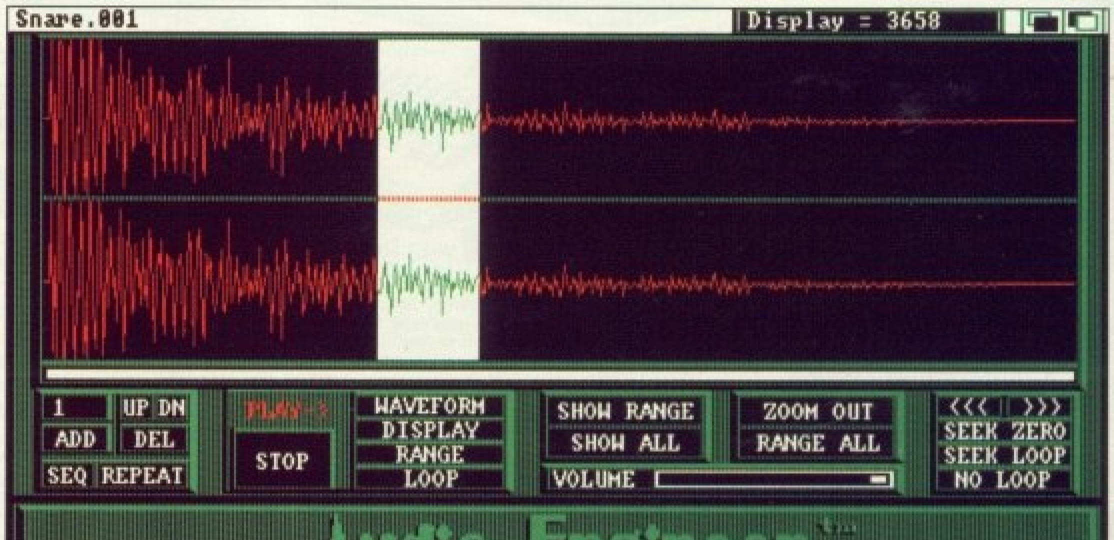
Audio Engineer Plus

Open your wallet and say "Help yourself"

BEFORE their unfortunate demise, the US based Aegis Corporation were responsible for many great things. Not only were they one of the few software producers to support the Amiga from its birth, but many of their products still remain some of the best available. Whether you needed a paint package, a desktop presentation system, a video titling program or even a music package, Aegis had something to offer you.

One of the many markets that Aegis managed to conquer was that of sound sampling. Even though their AudioMaster II system didn't even include a sampling cartridge (you'd have to buy that from someone else), it is generally regarded as the king of them all. In terms of shear sound quality and raw editing power, Audio Master II had no competition.

Although Aegis are now safely under the wing of Oxxi Inc (the people that brought you the MaxiPlan spreadsheet), AudioMaster II and its creator, Peter Norman, left the company to find a new home. Peter soon resurfaced at an Australian company called RamScan. Soon after, Audio Engineer was born.



IF you've ever used Audio Master II, then Audio Engineer needs no introduction. Just take one look at any of the screen shots within this review and you'll instantly recognise the unmistakable Audio Master II user interface – indeed, if it wasn't for the name change at the bottom of the screen and a couple of extra icons, you'd never realise that you weren't using Audio Master.

RamScan have decided to make Audio Engineer available in two different configurations. For those of you who already own samplers, the Audio Engineer sampling software is available as a stand alone software package that will happily work with the vast majority of sampling cartridges, including those that use the second control port (such as the Mimetics unit).

Unlike the two previous releases of AudioMaster, RamScan also offer





Audio Engineer complete with a dedicated sampling cartridge designed by G-Sof, a little known Australian hardware manufacturer.

G-Soft's unit, which they call an Audio Imager, is a large box – about the size of an average hard-backed book – which connects to the Amiga parallel port via a ribbon cable. G-Soft designed their sampler specifically to support Audio Engineer's impressive 56 KHz maximum sampling rate. It offers a pair of separate Mic and Line inputs, independant level controllers for the left and right sampling channels and a damned impressive audio bandwidth (100Hz to 50KHz+, for those of you in the know). Not only that, but it even offers a printer pass-thru connector.

Once you've connected everything up, the first thing you'll want to do is to actually sample something. Provided you've got a suitable sound source, Audio Engineer can sample in either mono or stereo. Selecting *Sample* from the pull down menus brings up the sampling requester. From here you can alter the sampling rate (up to a maximum rate of 56 kHz) and the size of the sample to be grabbed. To actually grab a sample, a single mouse click on the *Sample* gadget gets things going.

Amongst the list of new features, Audio Engineer allows you to pause sampling at any point simply by pressing the right mouse button. As soon as you release the mouse button, Audio Engineer then continues sampling. This can be particular useful for exclusing sections of a sound during sampling.

UNLIKE some cheaper samplers, Audio Engineer will happily sample into Fast RAM, therefore allowing you to grab incredibly long samples on a machine equipped with expansion RAM.

Sampling on a 9 Mbyte Amiga, it is actually possible to sample entire tracks into memory.

Obviously, the quality of samples depends heavily upon the quality of the sound source: After all, a chain is only as good as its weakest link. Ideally, it's best to sample directly from a CD player, but even with something like a low-proce personal stereo, you can produce some very exceptable results.

Sampling from a CD source, the combination of Audio Engineer and G-Soft's Audio Imager produced some of the cleanest samples I've ever heard from an Amiga. The samples showed plenty of depth, with sparkling clarity – in some cases, the quality of samples that I was able to obtain could easily compete with some 12 and 16-bit samplers that I've had the displeasure of using!

AS you might expect, Audio Engineer boasts an impressive range of editing tools. Amongst the usual cut, copy and paste operations, Audio Engineer lets you to add echo to samples, allowing you to simulate such effects as reverb quite easily. You can also edit the sample manually by "drawing" the waveform with the *Edit Freehand* option.

This also allows you to create completely new sounds without even having to own a sampler.

You can also mix (combine) waveforms, change their volume, reverse them (naissuR ekil sdnuos syawla ti gniklat enoemos fo elpmas a esrever uoy nehw taht ti si yhw?) Audio Engineer also provides a number of realtime effects such as Echo, Delay and Flange that add the desired effect to an incoming sound signal and then sends it straight back out again.

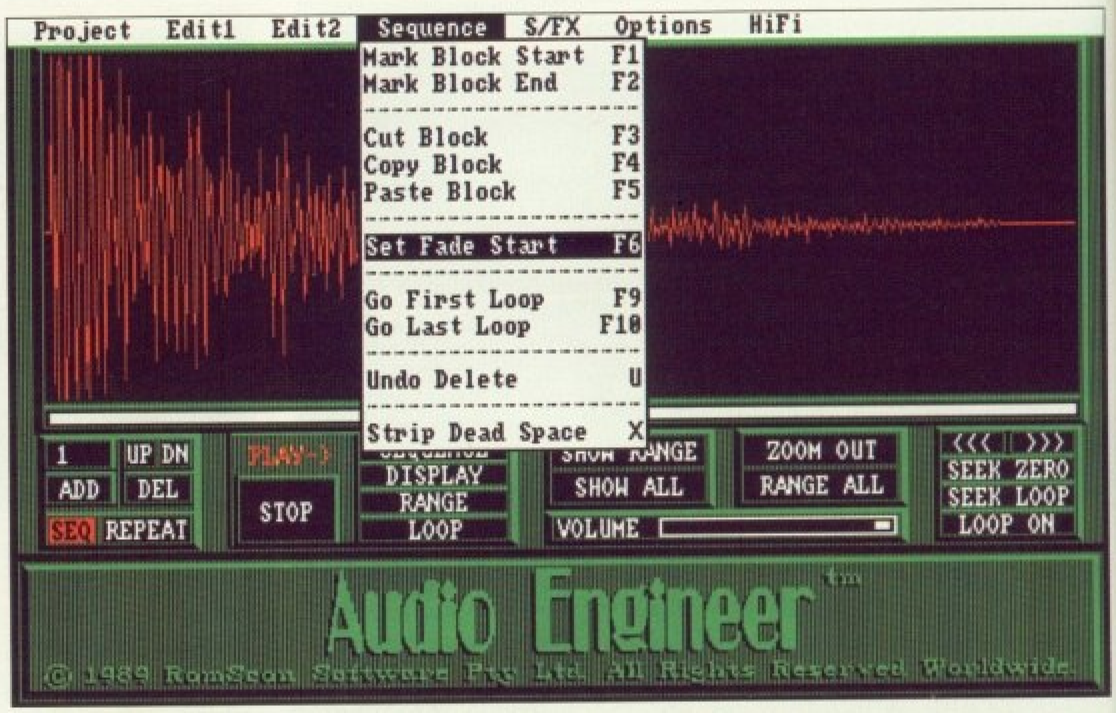
One of the most useful tools available is the *Tune Waveform* option which allows you to alter the pitch of a sample. If you're using Audio Engineer to produce samples for your favourite music package, then you'll find the Tune Waveform facility to be a true godsend. Like all samplers, the process of tuning relies on the trusty old ears to carry out most of the hard work – by activating a tuning tone, it's then up to you to tune the sample to match.

Potentially the most useful application of sample tuning is the *ReSample Data* option which allows you to convert samples between different sampling rates **without** effecting the pitch or length of playback: Something which even most professional samplers can't do! A large amount of memory can be saved by sampling something at the highest possible rate and then knocking it down to a lower sample rate for playback. In some cases, you gain a better quality final sample by using this technique.

Sample sequencing is nothing new, but Audio Engineer takes it one step further with a new sequencing system that allows complex arrangements to be built up in seconds.

Audio Engineer uses a unique system that works by assigning multiple loops to a single sample. This system works on the theory that most music is constructed from a series of patterns that are repeated over and over again to create the resulting music: Intro, melody, chorus, melody, chorus and so forth. By simply sampling each of these patterns once, you can use multiple loops to give the impression that the entire peice has been sampled. Coupled with Audio Engineer's ability to save samples in a

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new compressed format, several tracks of sampled music could be stored on a single floppy disk.

Audio Engineer allows you to assign up to 999 of these loops. A fade point can also be assigned so that once a certain point in a sequence has been reached, the sample will then be faded out to silence.

To make the process of finding the perfect loop that bit easier, Audio Engineer will do the job for you with its unique *Seek Loop* option. Seek Loop attempts to find glitch-free loop points by searching for a zero crossover for both the start and end points of the loop. If the loop that it creates is not satisfactory, click on the gadget again and Audio Engineer looks for another set of loop points. Very useful.

SAMPLES can be saved in a variety of different formats. A well as the usual IFF 8SVX format, Audio Engineer allows you to save in extended IFF format with either three or five octaves. These extended files can then be used within packages such as Music-X and Deluxe Music. Mainly due to that fact that Audio Engineer was originally an Aegis product, Audio Engineer will also save samples suitable for Aegis' Sonix package.

As an added bonus when saving samples, Audio Engineer employs a new IFF compression technique that allows an increased number of samples to be saved onto a single disk. As they stand, these samples can only be loaded into Audio Engineer, but RamScan do include both CLI and Workbench sample player programs.

Audio Engineer's Workbench-based sample player is a rather nifty little program called *CD Player Simulator.* The program uses the same control system employed by an average home CD player, making it instantly accessible to most. Both regular and multi-loop samples can be loaded into one of the CD Player's tracks and played back.

Wow! Audio Engineer is simply breathtaking. Whether you're using it with a CD player, a tape recorder or even a humble microphone, Audio Engineer can produce some of the sharpest samples you're ever likely to hear from an Amiga. Even if you're intending using Audio Engineer with a low cost sampler, you'll be amazed by the increase in sound quality.

The only thing that worries me is the price. Why do it have to be so damned expensive? Surely G-Soft's sampling cartridge cannot be that expensive to produce? Oh well, the best things in life always cost and arm and a leg (who ever said they were free?). If you can afford if, Audio Engineer is quite simply the best sampling system yet produced for the Amiga.



FACTS

A.M.A.S £99.95 Microdeal	**0726 68020**	**Pro Sound Designer Gold** £45 Power Computing	**0234 273000**
Techno sound £29.99 New Dimensions	**0291 690933**	**Stereo Sampler Mk II** £39.99 Trilogic	**0274 691115**
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AMIGA FORMAT – "It produced some of the best quality sound samples I have ever heard"

WHAT IS MASTER SOUND?

MASTER SOUND is a low cost, high quality sound sampler for the AMIGA range of computers featuring advanced Sampling/Editing/Sequencing software. MASTER SOUND enables you to record sounds from devices such as Personal Cassette or Compact Disc players into the AMIGA. When in the Computer, MASTER SOUND'S unique editor will enable you to edit the sound in practically any way you can imagine. Once you have the sample how you want it, you may incorporate it into your own Demo's or programs or use MASTER SOUND'S own BUILT IN sample sequencer to play back the sample along with a number of others too!

THE MASTER SOUND EDITOR

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★ FADE IN	★ FADE OUT	★ VOLUME	★ REVERSE
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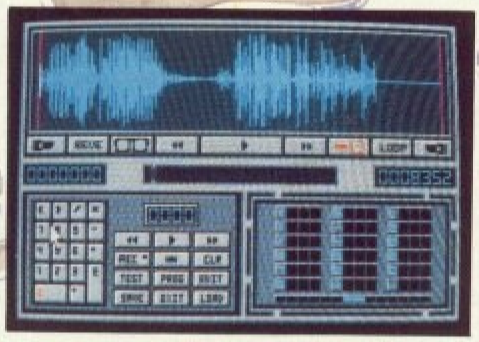
The impressive realtime Spectrum Analyser and Oscilloscope enable the user to monitor frequency content and volume with ease and help you to ensure that the sample quality is at its best.

THE MASTER SOUND SEQUENCER*

Allows you to play back samples in a sequence. Multiple samples can be held in memory at once and sequences are as simple to record as tapping keys on the computer's keyboard. Once recorded, the Sequencer can save the samples and sequence file out onto disc so that the files can be used in your own demo's.

THE MASTER SOUND DEMO

Allows you to play back your own sequenced sounds from the sequencer while displaying IFF picture files. This is great for creating your own public domain demo discs without having to be a computer programmer!



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EXCLUSIVE!

How to create a magazine on your Amiga

The Plain Man's Guide to Publishing

The dream of producing a full-colour magazine on the Amiga has become a reality, with a combination of software, hardware and a little American know how. John Kennedy puts pixel to paper and tells all

ORIGINALLY this feature was going to be nothing more than a review of some nice hardware and software. However, there was a problem: Who could review it for us?

The solution was obvious. This kit allowed anyone to produce magazine quality output. Who better to review than the magazine itself? In this case, that's means me.

So settle down and let me tell you a story about the exciting hi-tech world of magazine publishing here at Interactive Publishing. Are you sitting comfortably? Good, then I'll begin...

Producing a magazine such as your favourite *Amiga Computing* is a costly, labour intensive process. When flicking through the pages, you probably think of only the writers as having anything to do with "making" the magazine.

You probably couldn't be able to guess the number of people and the man-hours involved in each creating each individual page you casually glance at.

If you want to know how a magazine works, how it's put together, then read on. If not, well just skip this feature and go back to the games. Just remember one thing: Each page could have taken up to four hours to create.

THIS time last year all the magazines produced in this building were created in the following way.

First the copy was written. This was probably the easiest part of the entire process, so we'll not dwell on it.

The words were then put on to a floppy disk and put through a remarkably expensive dedicated type-setting computer. This machine ran out "bromides": To all intents and purposes a very high resolution photograph of all the words made up with the correct typefaces and sizes.

This photograph was cut up and pasted down on to a large sheet of paper. Corrections were often made by pasting new strips of paper over the top. Gaps were left where any pictures where to go. Thus the page was designed and laid out.

Eventually the camera-ready page was sent to the printers, where it met up with the artwork. In the meantime, the artwork had to go to visit a "repro house", where it was converted into a form the printer could use.

Finally, the page was printed. It was combined with all the others, bound into one volume, and hey presto! One copy of *Amiga Computing*.

THINGS have changed enormously since then, due to the emergence of the desktop publishing phenomena. Now extensive use is made of the latest Macintosh micros, running DTP software such as Quark Express.

Here is how the magazine is put together now.

First the article is typed out on an Amiga using Protext. It is saved in Ascii format and converted into a Mac readable form, using a utility called Mac-2-Dos.

Meanwhile on the Mac, Eddie, the layout person, has created a "template" of text columns and picture gaps on his screen. He loads our text into the Mac, and plays around with it until it looks as nice as Tym the art person wants it to.

Amiga-generated diagrams, game shots and digitised pictures are loaded into the Mac as well, using specially written software to convert the IFF images into a form which the Mac likes.

Some non-digital images, such as photographs which must maintain their very high quality, still have to go to the repro house.

Once on the Mac, further last minute editing can take place before the complete page is turned into a PostScript file. It is sent to another wonderful machine which churns out

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films with all the words and pictures on them. Four films are needed to reproduce a full colour page – cyan, magenta, yellow and black. These films are sent to the printers, who use them to print the pages of the magazine.

At this point you may be saying, "What! You use Macintosh computers! I thought you were all Amiga fanatics!" This is a very valid thing to shout. In fact, it can be quite embarrassing for us to have to admit that our Amiga magazine is produced on rival computing hardware.

There are good reasons for using Macs, some of them financial, some political but most of them all to do with the lack of decent software available on the Amiga when the electronic revolution started.

I'm happy to say that this situation has changed. There is now enough high quality software available to allow everything that can be done on a Mac to be done on an Amiga. And a few other things as well.

Which brings me rather neatly to this pile of hardware and software I have on the desk in front of me. For those who can't see it – and that's everyone except me,I suppose – I have an expanded B2000 Amiga, a Sharp JX100 Handy Colour Scanner and a copy of ScanLab 100 software.

The last two items were lent to me by Silica Systems, and unfortunately I have a nasty feeling they will want them back in the near future.

What I have here is basically the capability to produce *Amiga Computing*, here and now. The main reason why I'm not going to is that it would take me about six months to produce each issue on my own. However, let me explain how I would go about doing it, given the chance and a time machine.

FIRSTLY, I would sit down write the copy using Protext. So far, so good. How long this takes depends a lot on what it is I'm writing about, when the deadline is due and how much sleep I had the night before. An article like this would probably take 24 hours, split over the week.

Once written, I would load up my favourite DTP package, Professional Page. After consulting my past issues of *Amiga Computing* for house style, and Green's series on DTP for lay-out, I would create a rough page, leaving gaps for any pictures.

Now to the artwork: My favourite bit. Let's say, for the sake of example, I want to include a picture of Kilburn's answer to Kevin Schwantz – my friend Colin.

I have the original colour print in front of me, and it's just the right size for scanning, about 9 by 15cms. Time to connect the Handy Scanner to the Amiga and install the software on my hard disk, which incidentally, is very easy to do.

So the photograph is placed under the scanner, and a resolution selected. On a 1Mb machine – the barest minimum useful – I can just about scan a grey scale image.

With my extra memory, I can grab a

The Sharp JX100 Colour Handy Scanner

THE Sharp scanner is a lovely thing to have on your desk. It's small, quiet, compact and costs about £700. That's a lot of money to spend on one small piece of equipment, but let's have a look at what it can before deciding it's too expensive.

If you gave it to a computer illiterate person, there is no way they could ever guess what it's for. There are no buttons, no switches: Just a single cable leading away. It looks like a slightly larger than pocket-sized colour television set which hasn't been finished yet. Then you start using it...

Its main purpose in life is to convert photographs and drawings into something which your computer can use. It works in a very simple way: The item to be scanned is placed underneath, and a miniature camera is dragged over it, converting the analogue data to digital data as it goes.

The hardware is supported by a specially written piece of software called ScanLab 100. This is typically ASDG: Totally Amiga-friendly program and is a doddle to use.

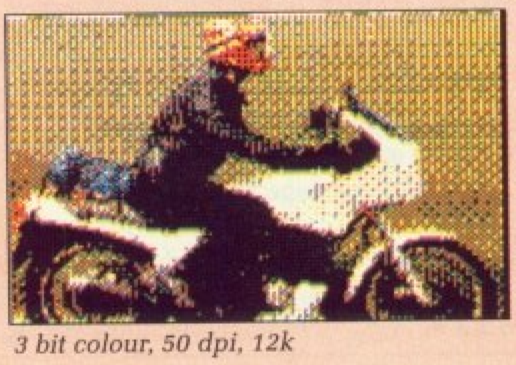
After selecting your image, and placing it under the 10 by 16 cm window you select a "preview" scan. This quickly and painlessly turns it into a miniature black and white image. Now all you have to do is draw a box around the part of the drawing you are interested in, and select the "fine scan" option.

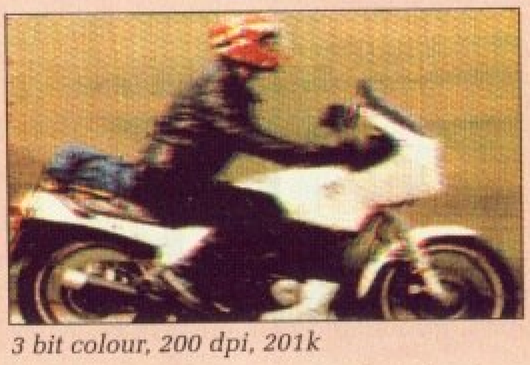
Here a problem becomes apparent: On a 1Mb Amiga, you can only scan an area about 2 cm's square with the highest resolution. You *really* need lots of memory. My Amiga has an extra 2Mb, but I still can't scan the full window.

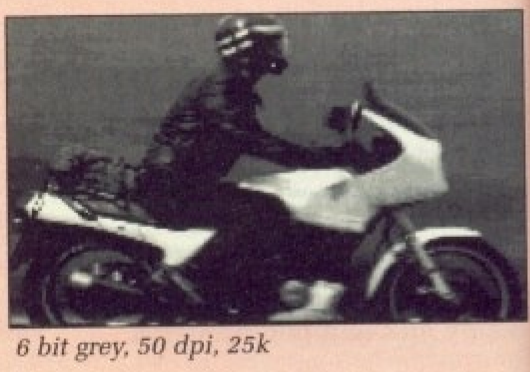
It is recommended you have more than 4Mb. Yup, that's a whole lot of memory. However, if you are taking DTP at all seriously, you probably have this amount already.

From within the fine scanning screen you can select between the different resolutions and colour options. The scanner will work at 50, 100 and 200 dots per inch. You can scan in monochrome, 6 bit grey scale, 3 bit colour or 18 bit colour. Monochrome and grey scale scans can all be made in one pass, whereas colour scans take three different passes: One for red, one for green and one for blue.

Scanning in mono and in 3 bit


3 bit colour, 50 dpi, 12k


3 bit colour, 200 dpi, 201k


6 bit grey, 50 dpi, 25k

full 18 bit colour image at the maximum resolution of 200 dots per inch. Displayed onscreen in HAM mode, it looks fabulous. Perhaps with a very expensive colour digitiser and an even more expensive camera I could obtain similar results, but I doubt it.

It takes about five minutes to complete the scan of the image and save it to my hard disk. I can now re-load the DTP package and place the scanned image. Looks good.

A FINAL check of the document, and it's finished. Time for output. To help me get the best from my graphics, I have a copy of *The Art Department*, also supplied by Silica.

With it, I can adjust the brightness, contrast and colour balance of the images, then separate them into their four colour components for output, using another little ASDG program call ReSep to re-combine the ProPage document with the illustrations. I would have done this from the DTP package, but ProPage only separates 12 bit plane images, and my image uses 18 bit planes.

Rather cleverly, I have – theoretically at least – sitting beside me a very high resolution PostScript compatible laser printer. I send the four separations to this expensive piece of kit, and once they are finished I can rush them down to the local printers and have them re-combined into a full colour image.

If I didn't have the printer, I could take the PostScript file to a bureau, where they would do more or less the same thing. For more details on bureaux by the way, check out the DTP section in the almanac.

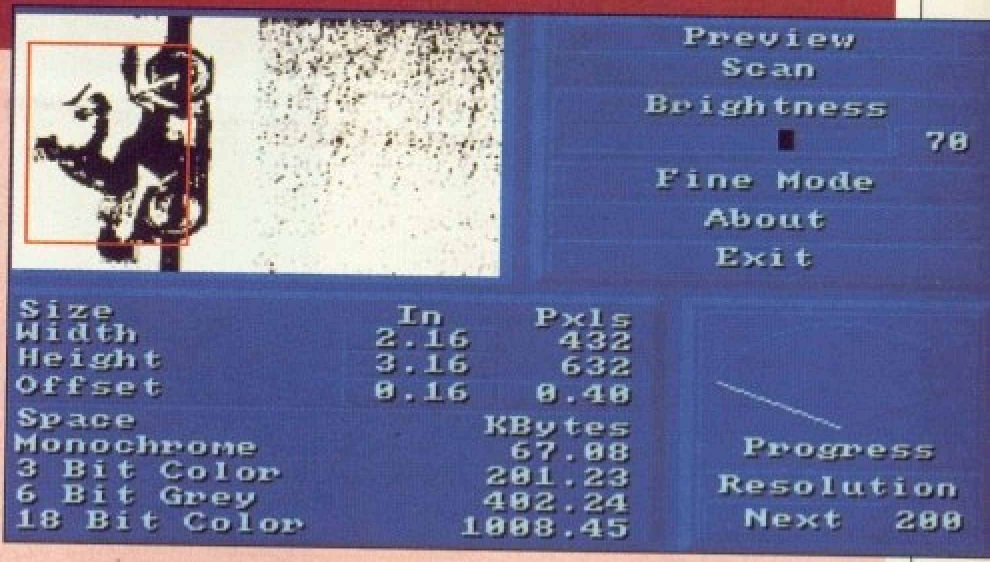
All I need do is repeat the above process over a hundred times, and I have a magazine.

SO you see: It can be done. It will be done,too. In fact, it has been done in the past by a well-known (although sadly now defunct) American Amiga magazine. The latest hardware and software will make the entire process a lot easier and the finished product of higher quality.

Because of the large investment made in Mac technology at Interactive, it is unlikely that this magazine will be produced on an Amiga. But you can rest assured we do as much as we can before handing our text and images over to Eddie.

NOW it's time for a more detailed look at the products used. The exception will be Professional Page. ProPage, as we like to call it, differs from Page Setter II only in that it can handle colour images and output to a PostScript device.

Page Setter II was reviewed in the April 1990 issue of the magazine and a working demo was on last month's cover disk, so there is little to be gained by looking at it again.



The main scanning control panel

colour is not recommended, for the software will reduce an 18 bit image to whatever depth you like with minimal loss of detail. The only reason for not doing so is a chronic lack of memory.

The highest resolution (200dpi) is by no means state of the art, but when combined with the 18 bit colour depth, it's pretty darn nifty.

The use of 18 bit planes means an awfully large number of colours can be produced: Many times more that the Amiga can generate using standard bitplane methods. Instead, you can make use of several "cheats" to look at all the colours.

Viewing the image in normal HAM mode will give you lots of coloursbut poor edge detail. Viewing the image in A-HAM mode will improve things somewhat.

Using A-RES format, and variants ARZ0 and ARZ1, will produce the best possible display. This mode is downwards compatible with the Dynamic Hires mode developed by Newtek for use with their DigiView Gold video digitiser. The pictures take so much processor time to produce, that unfortunately all you can do is look at them. But they look very nice indeed.

If you need to produce the best quality images you can and have a budget which will cover it, then go for it. Buy it.



6 bit grey, 200 dpi, 402k



18 bit colour, 50 dpi, 63k



18 bit colour, 200 dpi, 1000k

REPORT CARD

Sharp JX-1000 Handy Colour Scanner and ASDG ScanLab 100 software
£695
Silica Systems 081-308 0888

EASE OF USE....
Within 15 minutes of delivery I had produced some of the best Amiga graphics I had ever seen.

VALUE................
It's expensive. You can buy cars and things for this kind of money! Now, if you were buying on behalf of a company then it's a totally different matter. Have you seen the price of some Mac peripherals?

RESULTS............
Can't fault it. Well, OK I can. I would like the resolution to be a bit higher. Even 300 dpi would keep me quiet for a bit longer.

OVERALL 90%

This is an amazing device which proves that the Amiga is capable of doing anything that an Apple can, only cheaper.

Bits? Planes?

THE normal way in which the Amiga generates colour graphics is to overlay several "sheets" of memory. Each of these sheets is called a *bitplane* and together they control the colour of each pixel on the screen.

For example, if a screen had a single bitplane it could only display two colours. If it had two bitplanes, it could have four different colours. (Check your binary arithmetic if this doesn't make sense to you.)

The maximum number of bitplanes the Amiga can control in this way is five: Therefore it can display up to 32 different colours.

However, it is possible to cheat. By using a sixth bitplane and switching the display hardware into a special "Hold And Modify" mode, the Amiga can display all 4,096 of its possible colours on-screen at once. It works by using the fifth and sixth bitplanes to control how the first four planes control the individual red, green and blue components individually.

This explains why HAM image cannot deal with edges very well: Where the colour changes suddenly from light to dark, it takes several pixels for all the HAM values to follow suit.

There are several cunning ways to improve the edge blurring – for example, using 16 different starting colours which can be substituted at any time – but most put quite a strain on the poor old Amiga and leave no time for a program to run as well.

The Art Department

ALTHOUGH The Art Department (TAD) makes a wonderful companion to the scanner, it is also a piece of software which any graphics artist will find useful. Thankfully, it's also an entire order of magnitude cheaper, although you'll have needed to have spent some money of memory expansion: You need more than 1Mb.

TAD is an image processing suite which works with an internal resolution of 24 bit planes. In some respects it is similar to the program PixMate, but a little more professional and a little less on the gimmicky side.

Back to the DIY magazine scenario, and I would use TAD to provide fine tuning over the contrast, brightness (gamma actually) and colour balance of my pictures. And separating of course, into 24 bit cyan, yellow, magenta and black files.

I would happily acknowledge and make use of the UCR (under colour removal) and GCR (grey component replacement) functions.

As a graphics artist – which I'm not, unfortunately – I would use TAD to convert images between the various Amiga screen formats (from line drawing to extra halfbrite to HAM to 32 colours to A-HAM and so forth).

I'd also use the RIP (remove

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individual pixels) to tidy up any stray little dots which had somehow sneaked into the picture. I might also need to be able to resize the image, while maintaining complete control over the aspect ratio.

Since all internal calculations are carried out using 24 bitplanes, I know that my images are going to maintain their integrity as much as possible.

Using a series of "Loader" modules, TAD can make use of graphic formats other than good 'ole IFF. As well as Amiga-based formats such as Sculpt and Impulse, it can load PC and Mac type images. An impressive bit of future thinking, and an impressive piece of software.

And there's more...

AN ever better version of TAD is available –The Art Department Professional. It differs by supporting Arexx (essential for enabling long and boring batch jobs), saving in different formats (TAD only loads) and direct support of external hardware (such as scanners, 24 bit frame cards).

It means that the Amiga could become the central image processing computer in a set-up comprising all sorts of different machinery.

ASDG are providing an upgrade offer, so if you own TAD check it out.

REPORT CARD

ASDG's The Art Department
£69.95
Silica Systems

EASE OF USE....
No problems.

FEATURES ....
I kind of miss some of the little things which PixMate could do. However, for DTPing with graphics you can't beat TAD.

VALUE ....
A similar program on another micro would cost many, many times more than this.

OVERALL ***88%***

A useful, reliable and downright worthwhile program.

How these images were made

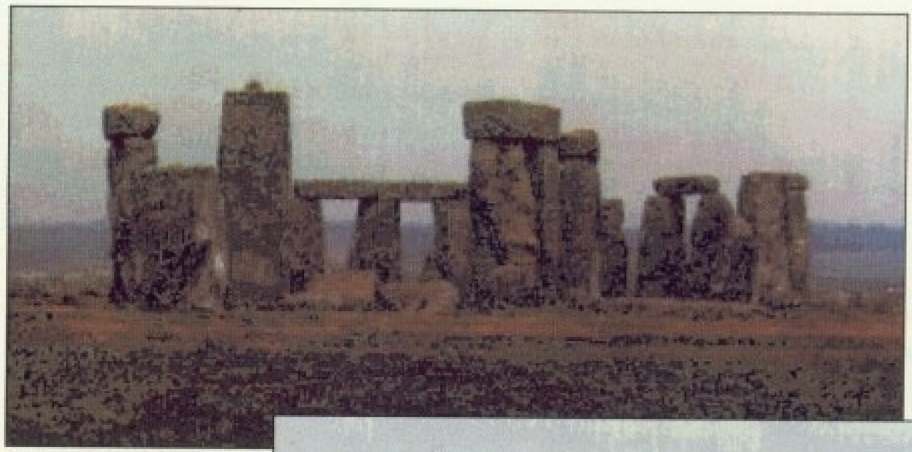
ALL the images were dealt with as normal 8, 16 or HAM colour IFF files. They were converted to TIFF format, and loaded into the Mac systems as normal.

Unfortunately this means that you are not seeing the images at their very best.

The 18 bit plane files were just too large to convert to TIFFs with existing office technology (in other words, the Macs). This is why the HAM image was used instead.

What it boils down to is that the colours are almost as you would see them, but the detail – especially around edges – is misleadingly poor.

Some of the images elsewhere in this issue of *Amiga Computing* have been generated using the kit described in this feature. See if you can spot them all!

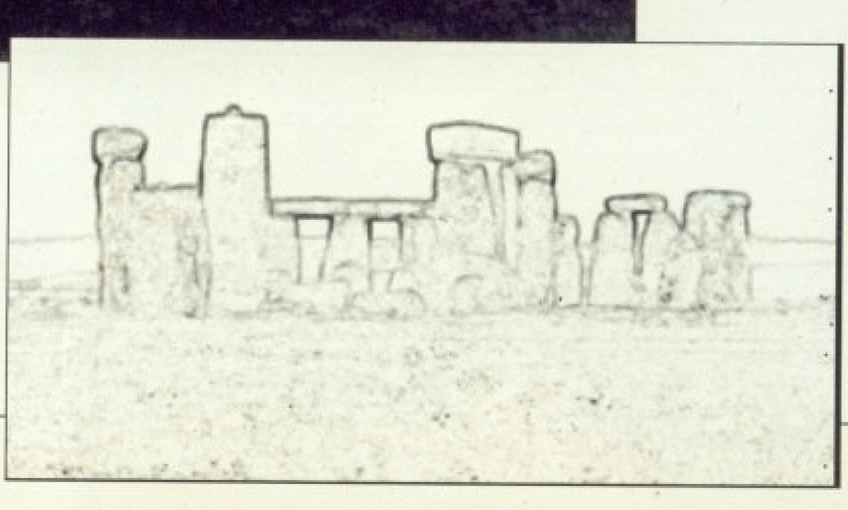


A photograph, scanned at 200dpi and 18 bit planes colour. This is the image which was loaded into The Art Department



The same image in EHB (Extra Half Brite) mode





Finally, processed to produce "line art"

Questionnaire

We're planning big changes to Amiga Computing, and we need your help! By filling in and returning the questionnaire, you'll help us to make sure that we are producing the magazine YOU want to read.

As an added incentive, five lucky people drawn at random will be awarded a prize. As we don't know what you would like, we'll give you the choice: That's right, just pick your own prize!

Section 1 - Personal details

You do not need to answer all the questions in this section

Q. Are you male or female?

Male ☐ Female ☐

Q. How old are you? ☐

Q. What is your occupation?

____

Q. How much do you earn per year?

£ ________

Section 2 - Buying habits

Q. What daily newspaper do you read?

____

Q. Which of the following magazines do you read, besides *Amiga Computing?*

- Amiga Action ☐
- Amiga World ☐
- Amazing Computing ☐
- Amiga Format ☐
- New Computer Express ☐
- The One ☐
- Computer and Video Games ☐
- Rampage ☐
- Amiga Fun ☐
- New Computer Express ☐
- 2000AD ☐
- Amiga User International ☐
- The Games Machine ☐
- Zero ☐
- Q ☐

Any others?

____

____

____

____

Q. Which of the following pieces of hardware do you own, or intend to buy?

	Own	Intend to
A500	☐	☐
A1000	☐	☐
A2000	☐	☐
A3000	☐	☐
.5 Mb memory expansion	☐	☐
Further memory expansion	☐	☐
External floppy disk drive	☐	☐
Hard drive	☐	☐
Colour Monitor	☐	☐
Mono Monitor	☐	☐
Video digitiser	☐	☐
Sound sampler	☐	☐
MIDI interface	☐	☐
Trackball	☐	☐
Genlock	☐	☐
Printer	☐	☐
Modem	☐	☐
Scanner	☐	☐

Q. If you own a printer, what make and type is it?

____

____

____

Q. How much do you spend on games software in a month?

£ ________

Q. How much do you spend on non-games software in a month?

£ ________

Q. How do you buy most of your hardware and software?

Mail order ☐
Shop ☐

Section 3 - The magazine

Q. How many of the past six issues of *Amiga Computing* have you bought? ☐

Q. Have you ever had problems finding a copy in your newsagents? If so please give their name and address:

____

____

____

____

Q. How many people – besides yourself – read your copy of *Amiga Computing?* ☐

Q.. What changes would you make to the magazine if you could?

____

____

____

____

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____

NAME YOUR OWN PRIZE: Turn the page!

Section 3 – The magazine (Continued)

Q. In your opinion, how much coverage is there given to each of the following topics?

	Not enough	Just right
News	☐	☐
Letters	☐	☐
Game news	☐	☐
Game reviews	☐	☐
Game cheats	☐	☐
Music	☐	☐
Graphics	☐	☐
Public Domain	☐	☐
DTP	☐	☐
Comms	☐	☐
Machine code	☐	☐
AMOS	☐	☐
C Programming	☐	☐
Hardware Reviews	☐	☐
Software Reviews	☐	☐
DIY Projects	☐	☐
Tutorials	☐	☐

Q. What topics would you like to be covered in the magazine which are not covered at the moment?

____

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Q. What do you think of the magazine's "sense of humour" ?

- There shouldn't be one ☐
- I didn't know there was one ☐
- I like it as it is ☐
- There should be more of one ☐

Section 4 - The Cover Disk

Q. Which is more important to you when you decide whether to buy an issue of *Amiga Computing?*

- The disk ☐
- The magazine ☐
- Both equally important ☐
- Don't care ☐

Q. How much coverage of the following topics is there on the disk?

	Not enough	Just right	Too much
Game demos	☐	☐	☐
Complete games	☐	☐	☐
Utilities	☐	☐	☐
Tunes	☐	☐	☐
Graphics	☐	☐	☐
Workbench hacks	☐	☐	☐

Q. If there were TWO disks on the cover, and the magazine cost an extra pound, would you:

- Stop buying it ☐
- Buy it more often ☐
- Carry on regardless ☐

Section 5 - Using your Amiga

Q. How do you use your Amiga?

	A lot/Sometimes/Never		
Playing games	☐	☐	☐
Video applications	☐	☐	☐
Animation/ graphics	☐	☐	☐
Comms	☐	☐	☐
Programming	☐	☐	☐
Word Processing	☐	☐	☐
Music applications	☐	☐	☐
DTP	☐	☐	☐

Other uses (Please state)

____

____

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____

____

Section 6 - The Competition

Q. What prize would you like to win?

____

____

____

____

____

Q. Why would you like this prize in particular?

____

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____

Q. Would you object to your name being put on a mailing list?

Yes ☐ No ☐

Your name:

____

Your address:

____

____

____

____

____

____

Your signature:

____

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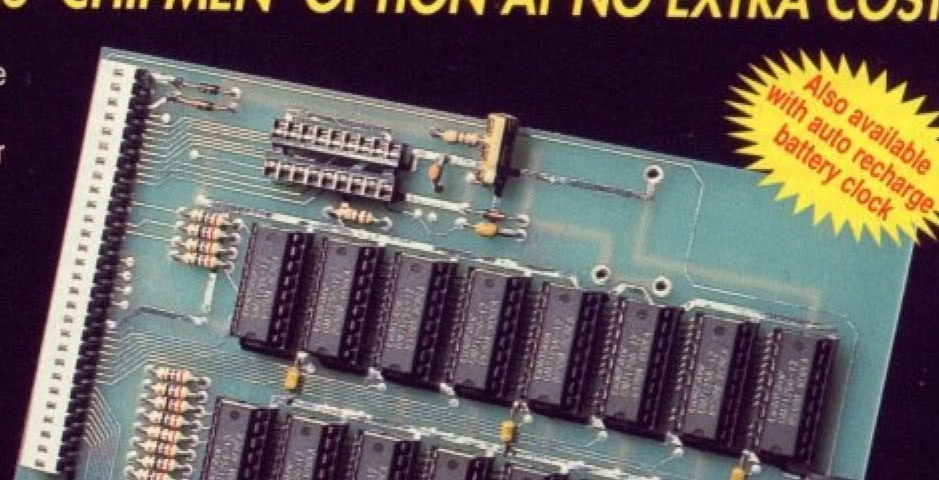
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Stewart C. Russell looks at the thinking man's version of MFI furniture – public domain software. Read the instructions carefully and you too could be a DIY hero with word processors, Assemblers and C



Home assembly time

WHEN I started writing these articles I had hoped to do special features on "Build Your Own" systems, such as a Build Your Own Home Business pack, or a Build Your Own Programming system. This first time I present the Build Your Own Assembly Language Development kit.

Quite a lot of people want to get into assembly language programming, but the high cost of an assembler/debugger system either puts people off, or turns them to piracy.

I don't (as you know) dig theft, and it grieves me to see Kuma's K-Seka on open download from unscrupulous public bulletin boards. None of these boards, I hasten to add, are in the UK.

The absolute minimum you need is an editor, an assembler, a linker and a debugger. Everyone already has a debugger in the shape of Commodore's ROM-Wack burnt into the Kickstart ROM. Unfortunately, to use ROM-Wack you need a 9600 baud serial terminal and a very large masochistic streak.

You can use Commodore's Ed, Edit (yucko !) or MEmacs as your text editor, or you can go for a slightly better one from the many available in the PD collections. Remember, you don't need (and often don't want) word-wrap, so the tiny Textra we gave away yonks ago on a cover disk is adequate.

Assembler-wise, there's really only one choice. A68k, written by Charlie Gibbs, has been continuously upgraded over the last three years. It's fast, feature-filled, and free. It's a plain 68000 assembler, which takes a source file on disk and writes a linkable object file back.

You need a linker to convert the linkable object file to an executable object. There's only one available, and that is Blink, by The Software Distillery. It's several orders of magnitude quicker than the Commodore/Metacomco Alink, and has a few extra features too.

The debugger is of extreme importance. As long as an assembler and linker do actually assemble and link, you can create code. But if the debugger doesn't have as many features as possible, you may never find the subtle bug which is stopping your program from running correctly.

Timo Rossi's Mon v1.24 on Fish Disk 310 is a Freeware interactive monitor and disassembler. It is not, as

➤



Turn Hex gibberish into mnemonic gibbersh with Mon

➤

yet, a symbolic debugger, which means that it won't use any labels you stored in the executable program at linkage time.

A symbolic debugger is really a necessity for large programs, unless calculating a lot of hexadecimal offsets makes you happy. But everyone writes their code in small, easily-tested subroutines, so it's not a problem.

Whaddaya mean you don't use small, easily-tested subroutines ? Pah – a plague of soft-boiled Minogue CDs to rain down on you.

Like all machine code monitors, Mon allows you to set breakpoints, and assign values to registers, before executing your code. The monitor stops at a breakpoint and displays all the registers and the next instruction.

If you're really not sure of your program you can walk (single-step) through every instruction. It would be tedious to walk through a ROM routine – they tend to be large and fairly incomprehensible – so Mon can execute a library routine and then stop with the results immediately afterwards.

You can guarantee that if your program decides to run off into the sunset, you've made a mistake in a conditional instruction somewhere. Mon is able to execute code at full speed then stand on its nose as soon as it hits a conditional instruction. This makes debugging almost enjoyable.

If you find a rogue instruction in your code you don't need to edit the hex to replace it. Mon contains a line assembler, which will assemble single instructions entered at the prompt.

THERE are a few little utility routines to make your day more pleasant. Apart from the usual memory allocation ones, there is a play (chip) memory command to check any samples. Disk blocks can be read, written and checksummed, so it's possible to write custom bootblocks directly from Mon.

I will state now that no representative of Finland has ever paid me to say very complimentary things about Finnish software. Though if they want to start, I'm not going to complain. Mon is a Finnish product, and it really is deeply satisfying to use. But then, you'd expect that from a country which had the intelligence to invent the greatest invention since the wheel, the sauna.

Right – those are the basic tools you'll need. To get into programming the Amiga, you'll also need one or two books, and a linker library file. Can't help you with the first field (techie books ain't PD, y'know) but the second is a little easier.

The proper Include files belong to Commodore, and they still believe in keeping Amiga programming out of the hands of the masses. We'll have to make do with a library that just defines where all the system routines live in each library.

Commodore supply Function Definition files with on the Extras disk, which actually contain enough information to build such a linker library. There isn't the space here to describe how to do it.

Alternatively, if you look in the Sozobon ZC archive on Fish Disk 314, not only will you find A68k and Blink – complete with documentation – but you'll also find Ami.lib. This file is a linker library containing, among other things, all the library routines' positions.

So Fish Disks 310 and 314 contain all the tools you really need for the Build Your Own Assembly Language Development Kit. If you have an unexpanded machine, you may need to find someone with more memory to unpack the big archive on Disk 314. Once unpacked, the programs work just fine with 512k.

Oops – Include me out...

BEFORE you start thinking that I'm going to rabbit on about Object Orientated Programming, I'm not. Heck, my idea of structured programming is putting a REM statement full of asterisks above all the GOTOs.

Nope, the tone here is of deep apology. Remember a while back I told the world at large that NorthC was the best thing, toasters notwithstanding, since sliced bread? Well, there's a better C compiler out there that I missed, but this one's not without its drawbacks either.

ZC on Fish Disk 314 is a very nearly complete C compiler system. It has a Unix-style "cc" front end, a Make utility, an optimiser, an assembler and a linker. As it stands, you can compile and run programs which use simple CLI I/O, with no floating point.

NorthC could do that too, but its printf() routine was so slow you could see the characters appearing like an ancient 300 baud modem. NorthC could work with floating point numbers, but couldn't output them. The much swifter ZC is quite happy outputting floating point numbers, but doesn't have the support files to work with them.

The ZC documentation cheerily tells everyone to send $20 to Commodore in the US, who'll send the 1.3 Developer Upgrade pack by return of post. This wonderful package contains everything you need to flip the helpless ZC tortoise back on to its feet.

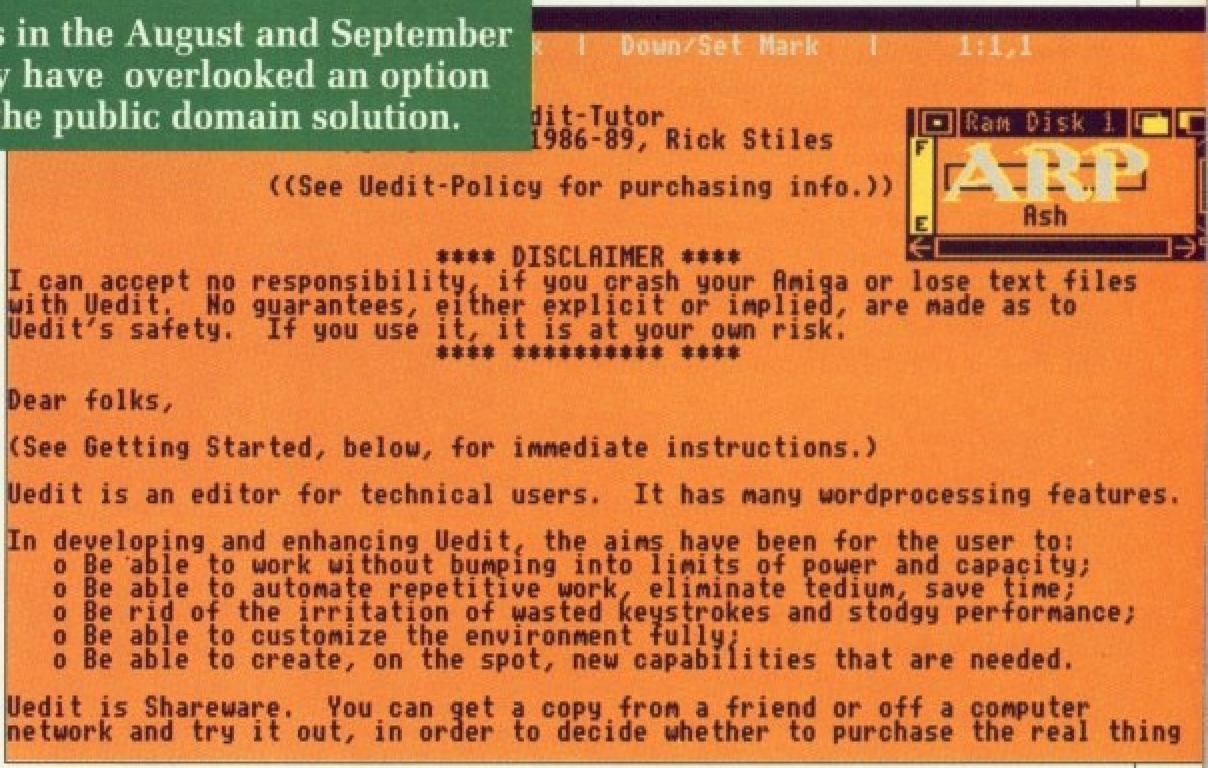
There's just one sandfly in the Savlon, though: Commodore UK do not sell the 1.3 Developer Upgrade pack to non-developers. It costs at least £75 to become the lowest form of developer, and you'll probably have bought an expensive compiler before considering that move.

Commodore do not allow the distribution of their Include files – the things that compilers and assemblers need – unless it's by a Commercial Developer. It's a case of the old greedhead "Need money to make money" vicious circle that I, for one, want no part of. Copying Include files off your mates is theft, another thing I'm not into.

I guess I'd better give my Tirade Launcher a rest now, lest I start to sound like some lowlife student politico. But I have met registered developers whose opinion of the technical support available in the UK is on a par with the sensation of finding damp chewing gum under a desk. Worse still, it's still warm.

What are words worth?

THE special on word processors in the August and September issues of *Amiga Computing* may have overlooked an option now more widely considered – the public domain solution.



Half-editor, half-Workbench, Uedit stalks the streets

I Edit, Uedit

BY the Walker standard definition, a text editor becomes a word processor when it has a print facility. By the revised Russell-Walker definition, the text editor must be able to print and wordwrap to earn the coveted Magimix des Mots d'Or.

Uedit easily qualifies for that title. Although designed as an efficient text editor, it has slowly evolved to become quite a powerful word processor. It is also a wonderful example of Shareware in action.

Uedit has undergone at least five revisions, all of them at the behest of its users. It costs between $48 and $103 to buy the newest Uedit, the lower price representing the fully-configurable Uedit with on-disk documentation.

The upper price, which is still under £60, will buy you a spell-checking, low level programmable, Wordstar VI, and Gold Key emulating Uedit, complete with neatly bound printed user manual. The spelling checker dictionary will be American, but that's no crime considering that current thought has it that American English spelling is more correct than English English.

The shareware Uedit has most of the features you could ever ask for in a text engine, save for spelling check. It has particularly good formatting facilities, allowing multi-column text, and fully adjustable margins, headers and footers.

Speedwise, Uedit is up there with the best. Scrolling is particularly speedy – the longer you hold the cursor key, the faster it gets, right up to a full-speed hardware vertical scroll. Lovely stuff.

But there are some slightly odd things about Uedit which may not endear you to it. First, it assumes you have a US keyboard, which mean your hashes come out quoted if you don't have that keyboard. Most UK people don't have that keyboard.

Secondly, Uedit uses the secondary cursor keys, that being the numeric keypad. Dunno about you, but I use the keypad a lot, so I'm not too keen here. The "real" cursor keys are used to shunt the displayed area around, but not the cursor.

A neat trick of Uedit's that even still I'm not sure how it manages, is that it can double as a second Workbench screen. You can open windows on it and run programs, but the other Workbench is still available. Never found it to be much use myself, but someone might.

The latest full shareware distribution of Uedit was on Fred Fish Disk 286, with an updated main program of Fish 301. You'll need Disk 286 even if you have a look at the update, but 286 alone should be enough to see whether you like Uedit and are willing to pay for it.

The really neat thing about registering Uedit is that you get a personalised version of the Shareware program. If you spread this version and others register after seeing your Shareware Uedit, you earn $15 commission. Definitely Share and Enjoy.

Wordwright for right words

IN all the thousands of PD disks there's only one program which bills itself as a wordprocessor. It's called Wordwright, and has some utterly unique features.

Wordwright is a old program by Amiga standards (1986) but even then, some features have never been bettered. Its most useful feature is a built in text-outliner which works in a rather clever way.

Outlining a piece of work before you start writing it is one of these disciplines (like touch-typing) that everyone says is A Good Thing but few people ever get round to doing. Wordwright makes it so easy that it's almost more bother not to outline.

All you need do is type in your headings, and then highlight them. After that, you "expand" each heading in turn, write your spiel, and then "collapse" the section. This hides the section text, leaving only the heading showing.

That means that a 20 page document could occupy just 20 lines, each

➤

heading expandable to a full page. Each of these sections could have any number of subsections, each expandable to any size you want.

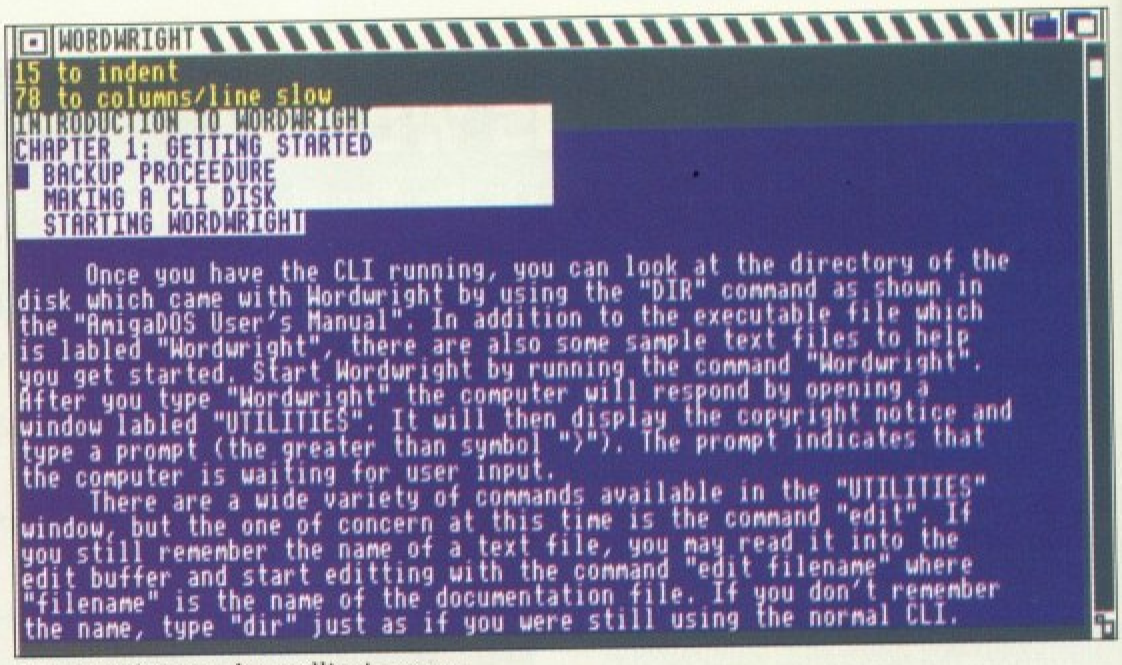
This setup would be little more than a neat feature without Wordwright's index generation facility. Put a *Contents* command at the end of the document, and when printed outit will have a contents page indexed by the headings you defined.

Wordwright has quite a powerful mailmerge facility. Now you can send thousands of really sincere letters to people you've never met.

I once tried to use mailmerge to write job applications. I got no interviews. Mail Merge – it really screws you up.

Wordwright is pretty quick, with reasonable documentation and good help facilities. It has menus to duplicate the most common commands, but you will need to skip into command mode for a few functions.

The oddest thing about Wordwright is its proportional gadget on the right hand side of the screen. These are meant to display the size of the current screen in relation to the current document.



Wordwright? No, the spelling's wrong...

Wordwright uses the gadget to indicate how large the text is in 32k lumps. Thus the gadget is not proportional, and isn't really a useful aid to moving through the text.

It's possible to exit Wordwright without being told about modified text. This is a major oversight, and one which could lose you an entire document. If you're careful, though, it should never bother you.

You can find it on the EMPDL and KADSoft Home Utilities disks, or on Panorama Disk 48.

DME – It's the one for me

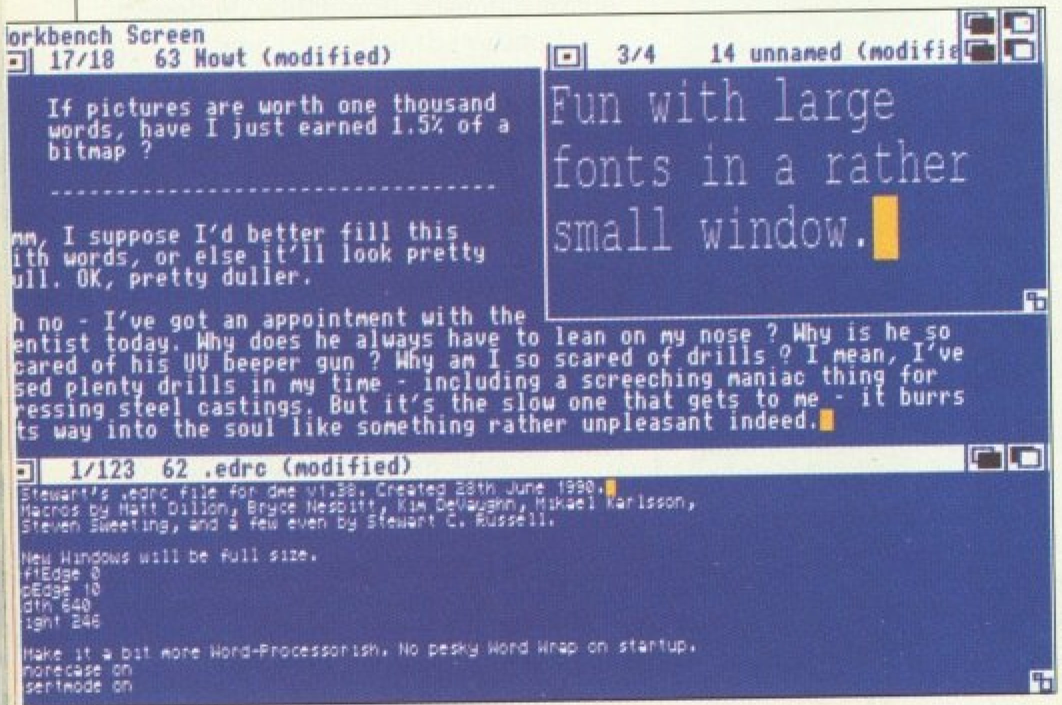
I USE at least three different text editors/wordprocessors, and all have completely different control keys. Pressing the key for "Move to End" on one produces a square bracket on the others. The keys for "Save Document" on one is the same as the Search key combination on another. And none of these combinations is exactly the way I'd want it.

So I would like a wordprocessor that, no matter which set of keys I pressed, it would know what I meant. I would also like a word processor that ran like greased lightning on overtime. Oh-yeah, and can converse with ARexx into the bargain.

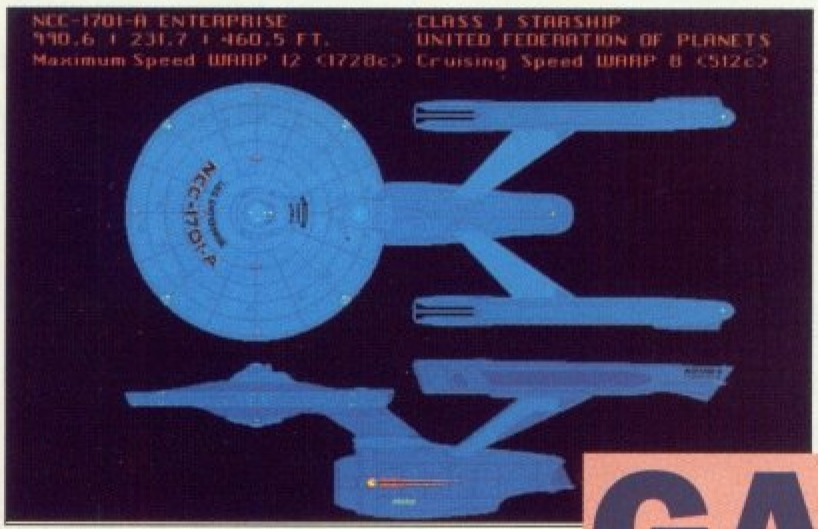
I have found that word processor. It is by nature a programmer's text editor, which warns that "it has not been designed for user friendliness". It's called DME, it's Freeware, and v1.38 lives on Fish Disk 284.

DME is the text editor that Matt Dillon wrote when he discovered that there wasn't a reasonable programmer's editor for the Amiga. Matt Dillon is possibly the most prolific writer of freely distributable Amiga software, with at least 35 titles in the Fish collection, ranging from small hacks to complete network communication systems.

DME relies on a configuration file to read in the key definitions. Any printing key or mouse button can be redefined to do anything at all. And with DME's macro programming



DME: Lots of fun with lots of fonts





GAME OF THE MONTH

Star Trek

CAST your minds back a bit and you may remember a Scandinavian Star Trek which wasn't half bad. If you don't remember it, tough, but don't forget to reel your mind back in.

Some people in high places like Star Trek. All the Space Shuttles were named after Trek ships, and it is now correct American to say "To boldly go". Sheesh – if a low budget B-series like Star Trek can influence the American people, that explains a lot.

Tobias "AgaTron" Richter likes Star Trek, and has done a rather nice little game based on Star Trek – The Next Generation. When I say little, I meant only takes up two disks, and really likes at least a megabyte of RAM. There is a littler version which will run in 512k, but you sacrifice most of the sound.

Tobias has spent a lot of time with a sampler getting the noises just right. All your favourite Trek sounds are there, timed just the way you'd expect. Most of the game is spent managing the Enterprise's affairs, dealing with attacks and fulfilling missions. That's quite enough to be going on with, since the Enterprise has all the reliability of an Edsel. Scotty (with that marvellous Irish accent of his) would be shocked.

The graphics are neat in extremis, but the gameplay is a bit too deep for me. Everyone keeps telling me how good it is, so far be it from me to disagree.

Star Trek is available from primarily from George Thompson Services, but other libraries should have it. It's "Worthware" – you send Tobias what you think it's worth. Rotten fish will not be appreciated.

language, anything is possible.

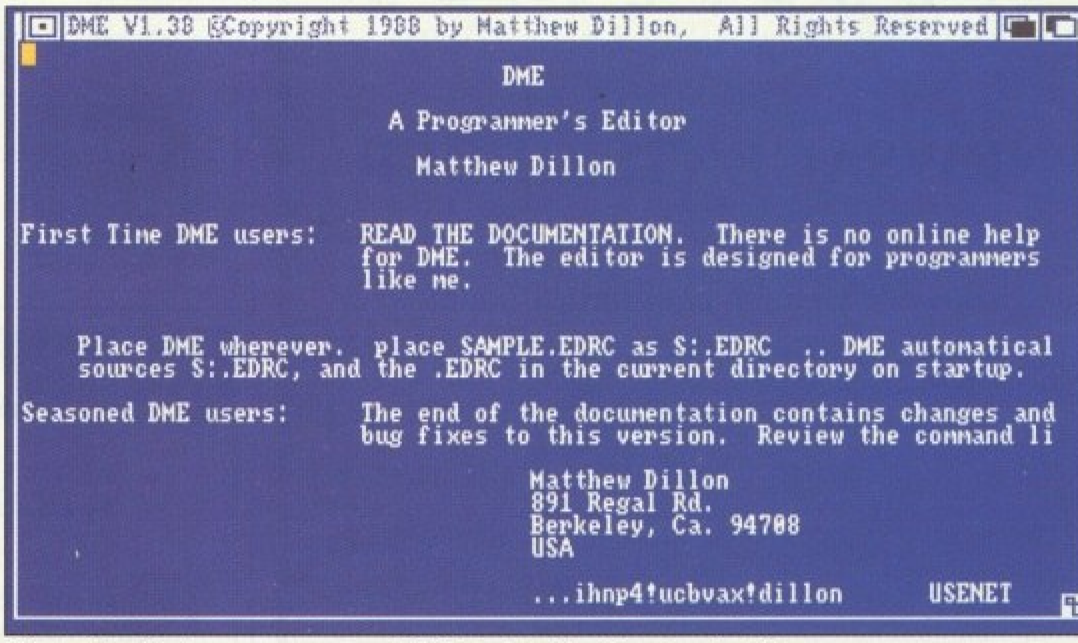
As shipped, DME is a rather basic text-editor – no menus, no print command, no global find-replace and no paragraph reformatting. But if you have a penchant for simple programming, you can configure DME to your exact specification.

DME can open as many documents as you have memory for the text and the windows. You can cut and paste between them, and each window can have a different (fixed-pitch) font. These fonts are only for the screen – if you create a print command – via SaveAs PRT: – it will only use your printer's standard font.

The program automatically searches for configuration files in current work directories, so the DME configuration you use for writing C programs can be totally different from the one you use to write purple prose.

DME writes an icon with the Save file if you started the program from Workbench, but doesn't if it was started from the CLI – a neat touch.

If you like messing about with configuration files and want a zero wait-state text engine, DME is the business. I'd look elsewhere if you don't like staring the CLI in the eye. If I have to give it further recommendation, it's the editor I now use for all my writing.



One of the first uses you can put DME to: Reading its own doc file

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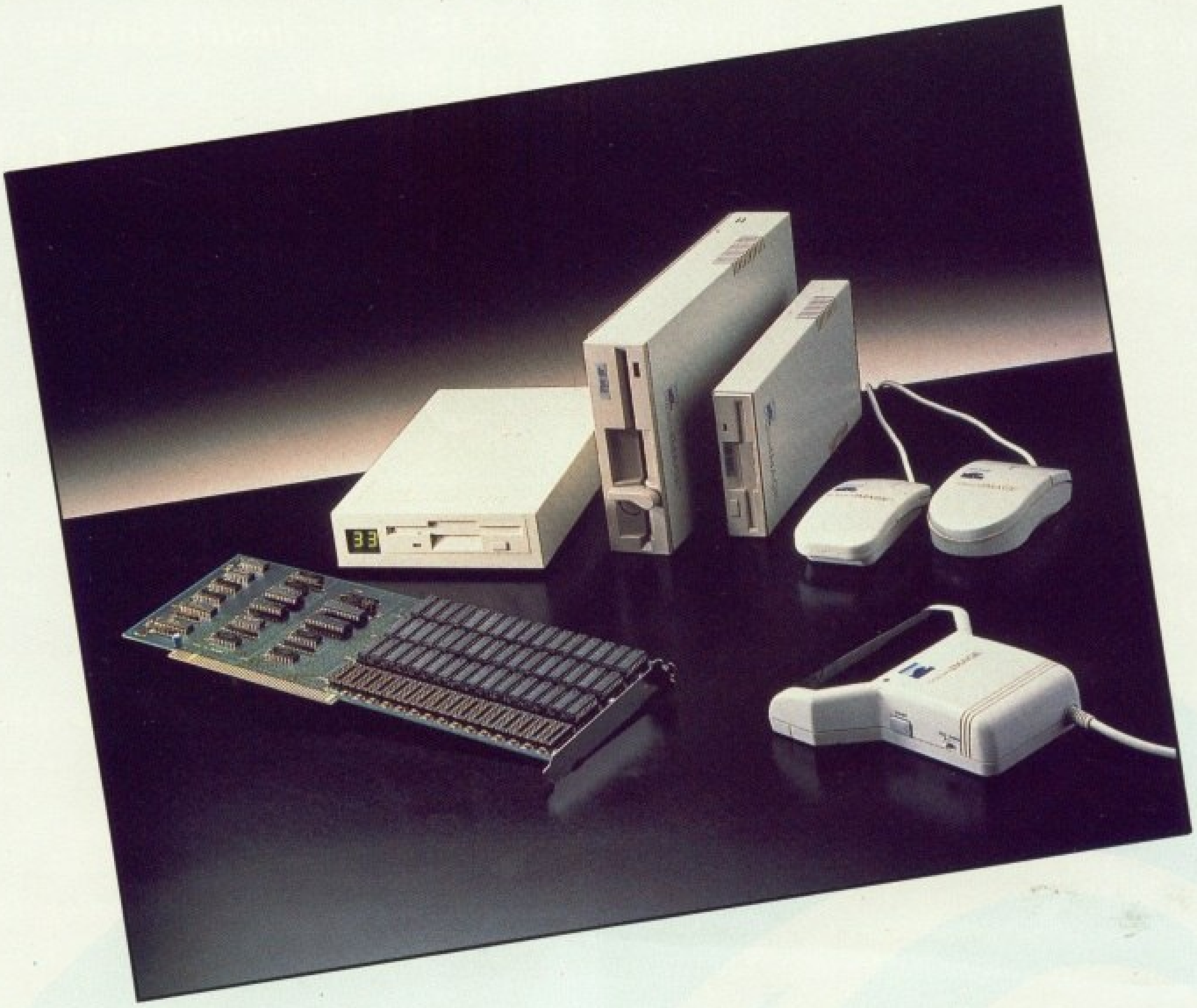
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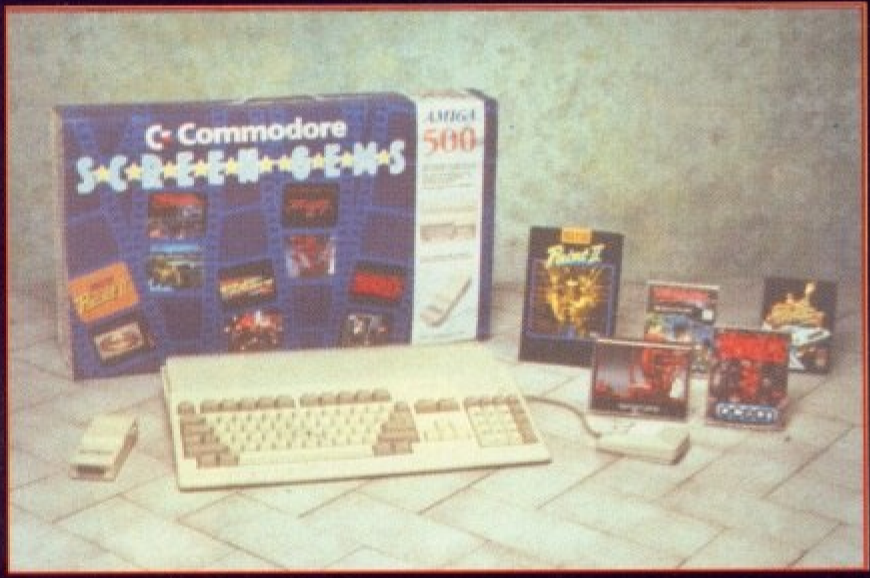
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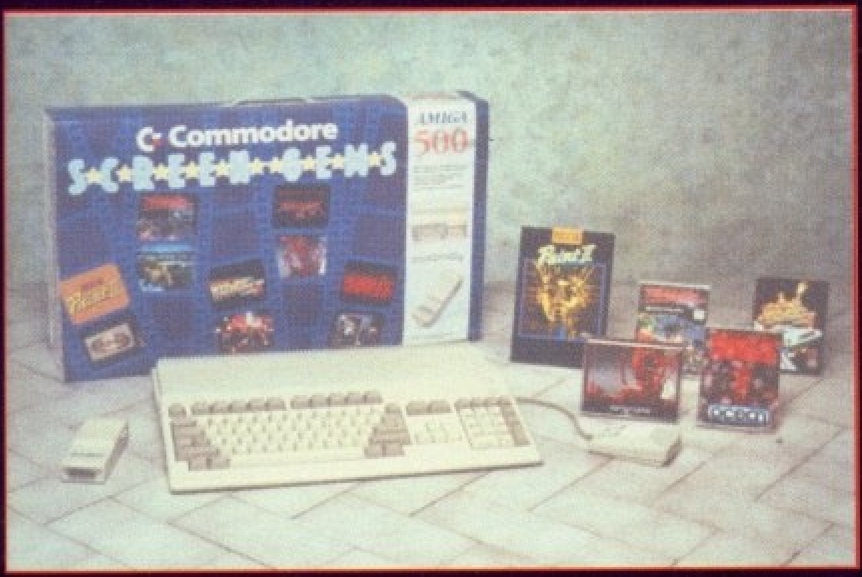
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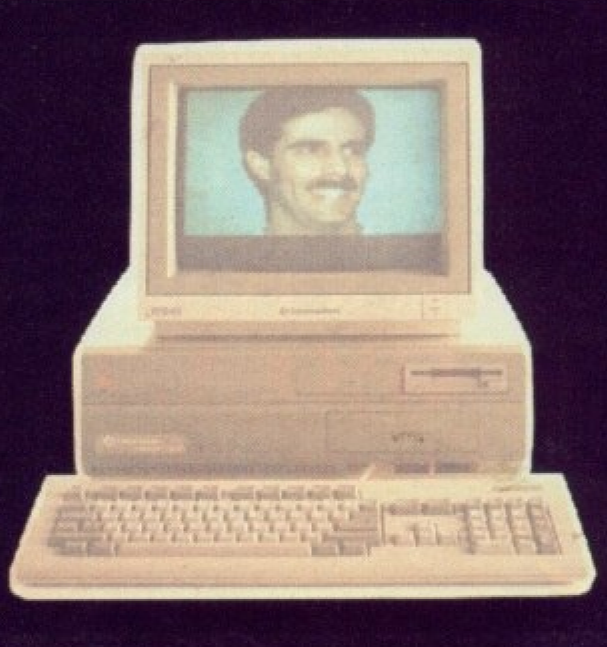
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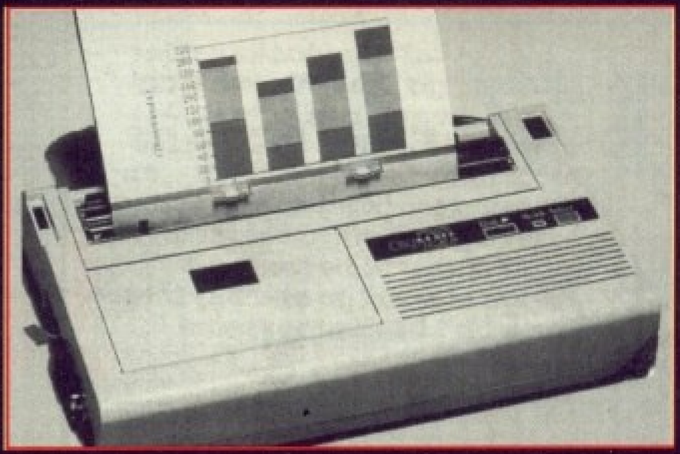
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Split ends



Sick of pieces of coloured plastic? Yearning for a hi-tech video solution? Rombo could have just what you're looking for, as John Kennedy discovers

IF you have ever described how you digitise images in colour to non-computing friends, you may have stared at a few disbelieving faces.

"What", they say, "you hold up pieces of coloured plastic in front of the camera? Are you serious?"

"Erm....yes", you say, "and it works really well!"

But it's too late. You have lost their respect. No longer are you a computing genius, you have become a crank, a mad professor, a nutter in an anorak.

If you are afraid of this happening to you then rest easy: Modern technology has come to your rescue. In actual fact, the solution was always there, it was just that it was too expensive to consider. But first things first.

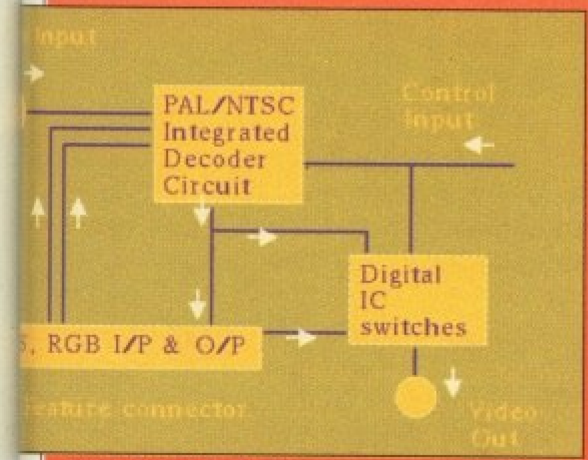
As we have said on many occasions, to grab a picture in colour you must grab the red, green and blue portions of the image separately. Once the computer knows the amount of each primary colour in each picture, it knows just the amount of colour to add to each pixel in the display. Result: A full colour image.

The sensible way to split the image into its RGB components is to use some electronics. What is needed is a Black Box with a video signal bunged in at one end, a switch on the top to choose the colour, and a separated signal out the other.

This is what VIDI RGB does. And it's black too.

Although mentioned in passing as part of last month's digitising spectacular, we reckon it deserves a bit more recognition. Frankly, a splitter this cheap is something that will cause several people to perform a double-take anyway.

Assuming you have the VIDI Frame grabber, colour digitising is a fully automatic process. Just hit a key, and the three images are grabbed, processed and displayed in a few seconds. With decent lighting and a cheap camcorder the results are pretty darn good. Marginally better than with coloured plastic, but without all the hassle.



VIDI RGB block diagram

With any other digitiser – frame grabbing or not – you must use the splitter in manual mode. A multi-coloured LED on top of the box indicates which colour is currently being let through.

If it's white, then no colours are being filtered out – the image is the untouched original. A press on the button and the LED turns red. Now only the red component is being let through. Another press and the LED turns green. One more press and it's yellow. Yellow? Well, it would be blue but blue LEDs are a bit tricky to get hold of. Rest assured that the video signal component is totally blue.

Expansion-minded folk will be interested in the special "feature connector". As well as various control signals and power lines, there is full support for the S-VHS (or "super VHS" – an improved quality video standard) system. This should ensure some degree of future-proofing VIDI RGB.

Furthermore, there are some things which simply can't be done without a video splitter. For example, the new Still Video machines are very exciting, but at the moment getting the image on to an Amiga is a bit tricky.

With a splitter it is possible to digitise the image in colour at a resolution only limited by your grabbing hardware. The same goes for grabbing a video taped image in colour. Unless you can electronically split the signal, you're stuck with a mono image.

If you need a splitter for a specific purpose, then you can't go wrong with VIDI RGB. Even if you think you would *like* a splitter, just to do away with the coloured plastic, you would still be making a wise move.

REPORT CARD

VIDI RGB
Rombo Productions Tel: 0506 414631
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EASE OF USE ...
Simply press a button to choose the image colour. When using VIDI, even this arduous task is removed.

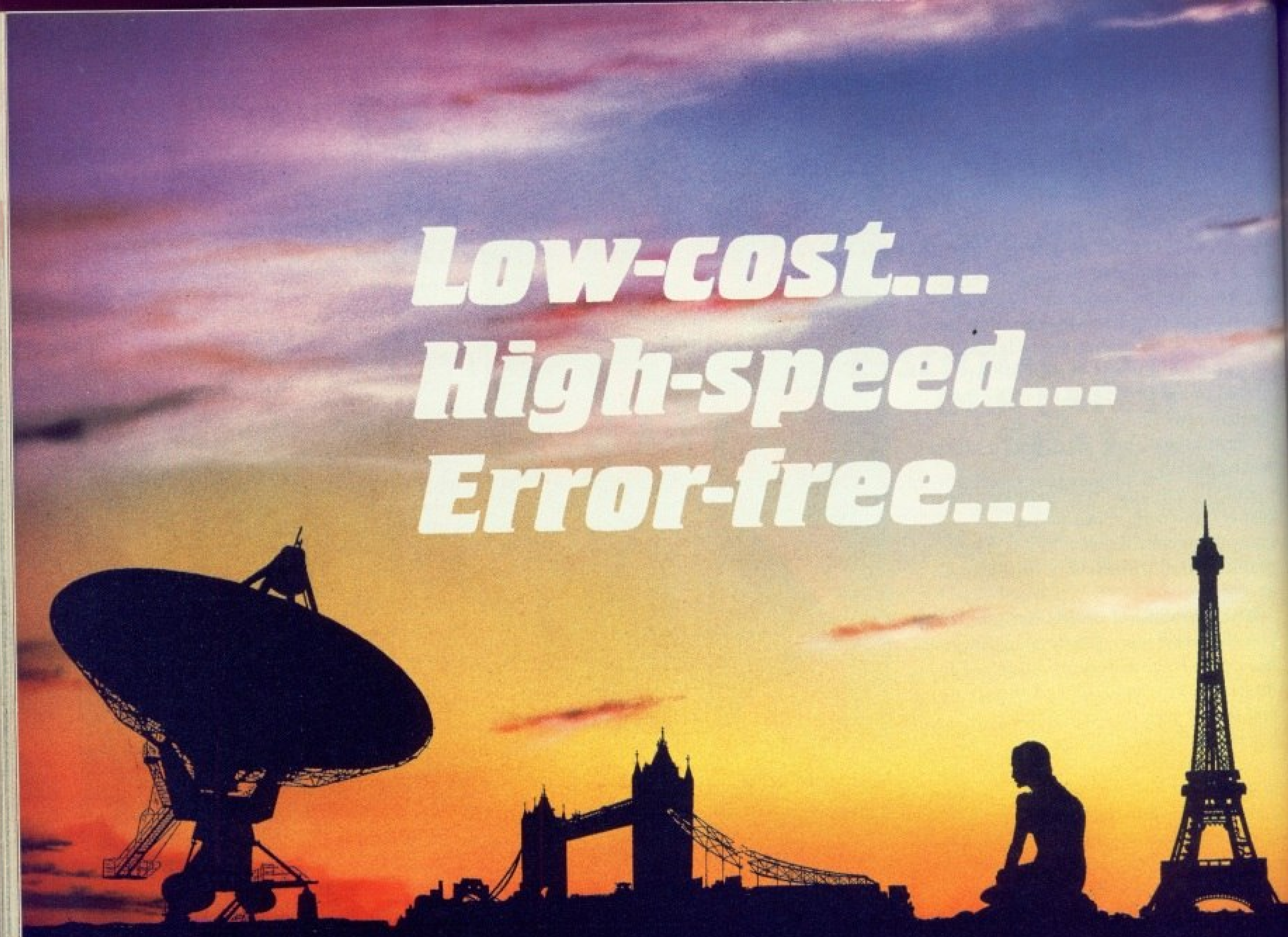
VALUE................
Video splitters are rare. Affordable ones rarer still.

OVERALL 80%

A useful – sometimes essential – addition to your digitising setup, at a price which isn't prohibitive.



An image taken directly from video tape



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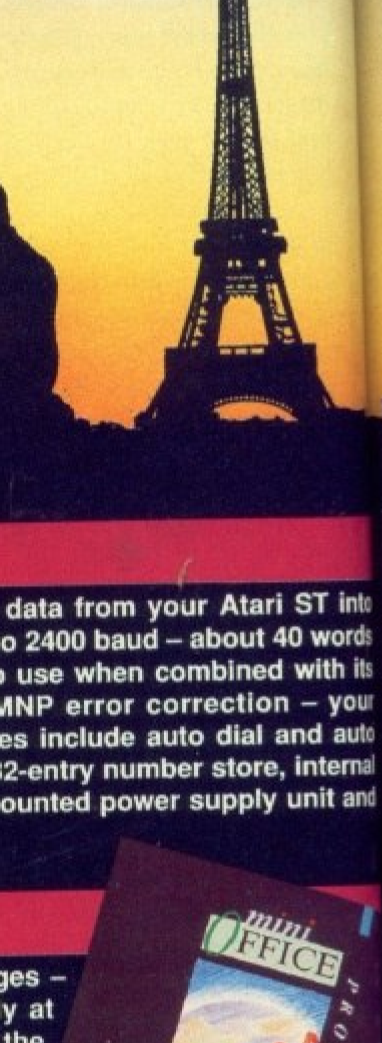
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THE MODEM

The EuroLink modem is a robust and sophisticated device which turns data from your Atari ST into signals which can be sent along a telephone line. It can handle speeds up to 2400 baud – about 40 words a second. Although it has many powerful features, it is simplicity itself to use when combined with its accompanying software. Built into the Hayes-compatible modem is MNP error correction – your guarantee of a corruption-free connection. Its wide range of other features include auto dial and auto answer, auto redial, baud rate scanning, auto terminal baud rate sensing, 32-entry number store, internal loudspeaker, call progress monitor, bell tinkle supression, external plug mounted power supply unit and built-in 'watchdog' circuitry.

THE SOFTWARE

Accompanying the modem is one of the ST's best-selling comms packages – the complete Mini Office Professional Communications. Sold separately at £24.95, it simplifies connection to MicroLink. Two mouse selections and the rest is automatic – straight to the service you require and with all the access formalities taken care of. After that you can move freely around MicroLink, capture text on disc and send pre-prepared documents – all with a minimum of keystrokes. It can also be used to access Prestel and other services in addition to MicroLink. Included in the software is a text editor and other desk accessories.



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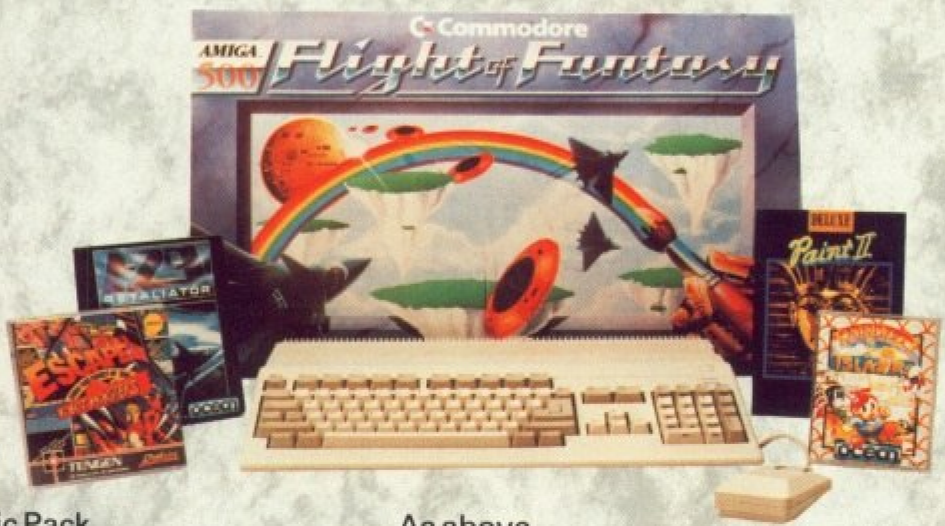
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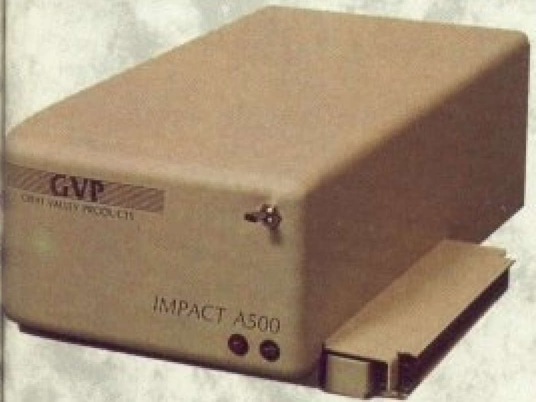


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Empire



SPIDER senses are tingling... that evil Mysterio has kidnapped sweet Mary Jane... got to get her back!

If you want to help good 'ol Spidey, you'll need two things: The first is a strong desire to take a tour of some old movie sets, and the second is a copy of the game. The latter is available this very month, so look out for it.

Also due to be released in the next few months are *Wrath of the Demon* (which apparently has 60 frames per second animation – something we'd really like to see on a 50 frames per second machine) and a game based on the life and times of Paul Gascoigne. Can't wait.

Domark

YOU meet the nicest people at Press launches. A case in point is the wonderfully wonderful Clare Edgely, from Domark.

Domark had several things they wanted to tell us about, including the host of Atari coin-ops they were converting.

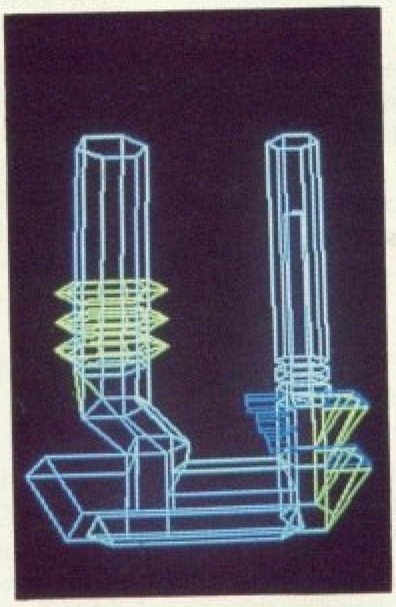
One is the fast and fabby *Stunrunner* which should be available shortly, and judging from demos we saw will be well worth waiting for.

Atari are helping as much as they can with coding by supplying actual game graphics. The picture shows the outline of a graphic which will be filled in by the time the game is finished. Other games being converted include *Hydra*, *Thunder Jaws* and *Skull and Crossbones*.

The first Russion fighter simulator should be with us soon, too. The version we saw on the PC looked both playable and exciting, and the Amiga game is not far behind.

Other neat stuff "coming soon" includes what could be the war game of the decade, *Vietnam*. Written by a programming historian, this will be a complete "laboratory" where you can try out ideas and strategies. It's accurate, easy to play and due out in January.

The *Freescape* system used in the games Dark Side and Castle Master will soon be released to the general public. It's true: If you think



you could do better that the previous Freescape games, you'll soon be able to have a try.

Using the three dimension modelling system, plus a complete puzzle programming language, you'll be able to knock up anything from an interactive map to an atmospheric adventure with ease.

Infogrames

THERE certainly seems to be a veritable plethora of games on the way from this software house. As well as *Alpha Waves* which we took the eau out of last month, games based on *Gengis Khan* and *Bandit Kings of Ancient China* will be with us later this month.

The game that caught my eye was the old novice magician plot game *Mystical*, mainly because the Wizard's name looks like a typing error. The demo certainly looked very pretty, so keep an eye out for it: It should be here before Christmas.





Glasnost takes to the air, and we don't mean Radio Moscow

THE Amiga's Interchange File Format is a wonderful thing. By adopting a workable, intelligent standard the user is assured a relatively easy time when it comes to swapping data between programs and even other computer systems.

So far we have looked at the overall structure of the IFF tree, and described a few of its many possible uses. We now increase the magnification of our microscope a little more and focus on the contents of the IFF chunks themselves. What lies within?

A PROPERTY is a chunk which describes other chunks. It is rather like a set of assignments in a program, such as:

```
width=320;
height=200;
x.cord=10;
y.cord=10;
```

A data, or non-property, chunk holds the actual data of a FORM. You could think of property chunks as adjectives, and data chunks as nouns, so BMHD and CMAP are properties, and BODY is a data chunk.

Some chunks are essential in a particular type of file. An ILBM file, for example, must have a BMHD chunk in order to be valid, so BMHD is described as a required property. The CMAP chunk, however, is not essential, so we call it an optional property.

A universal chunk is one – such as FORM – which is defined in IFF-85, and forms part of generic IFF. The identifier "FORM", among others, is reserved for all IFF files, so if I develop a new supplement I can't invent some new type of leaf chunk and call it FORM. A FORM will always be a group chunk holding a data object.

A local chunk is one which is reserved only within the supplement in which it is defined. A CMAP, for example, is currently only defined within ILBM.

If I come up with a new supplement, say ATLS for an atlas, then there's no reason why I can't use CMAP to hold a nautical navigation chart, so long as I only use it as such within a FORM ATLS.

When an IFF supplement is first produced it is asking a bit much to expect the designer to think of every possible use to which the new FORM type will be put.

The IFF standard permits developers to invent new types of chunk to go into previously defined forms. One example is CRNG – a chunk introduced by Electronic Arts when they developed Deluxe Paint. It is inserted into a FORM ILBM to describe colour cycling.

Because it was introduced after ILBM first came into use, it is known as a non-standard chunk. As IFF allows non-standard chunks to be introduced, any program which reads IFF files *must* be prepared to skip over any chunks it does not recognise.

A "CAT" is a group chunk which is used as a mixed bag. It could hold, for example, a slide show, with a FORM SMUS for music, and a LIST of FORM ILBMs to be shown in sequence.

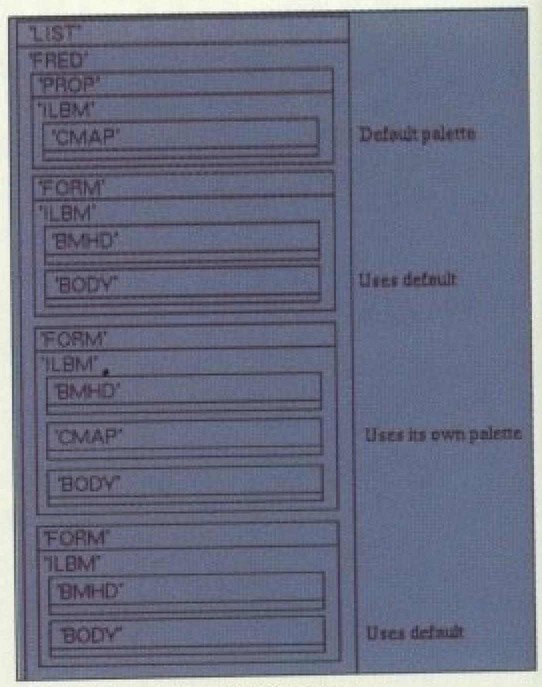
A LIST is like a CAT, except that it allows for properties to be shared between chunks inside it. So if a lot of pictures all use the same palette, you can have a LIST containing a PROP with a CMAP inside it, followed by a whole sequence of FORM ILBMs without CMAPs.

A PROP is not the same as a property chunk – rather it is a group chunk which is used for holding one or more property chunks. A PROP will only ever appear inside a LIST – not a FORM or CAT.

If one or two pictures have a different palette from the majority, you can put a PROP at the top to set a default for FORM ILBMs without CMAP chunks, then different CMAP chunks inside the ones which differ, to override the default.

TO give you a flavour of how IFF files really work, there are two programs on this month's cover disk.

IFFanalyse lets you convert IFF files into a human-readable form. You can just examine them, or if you wish edit them with your favourite text editor. Afterwards you can use the second program, IFFsynthesise, to compile



A PROP inside a LIST sets default properties

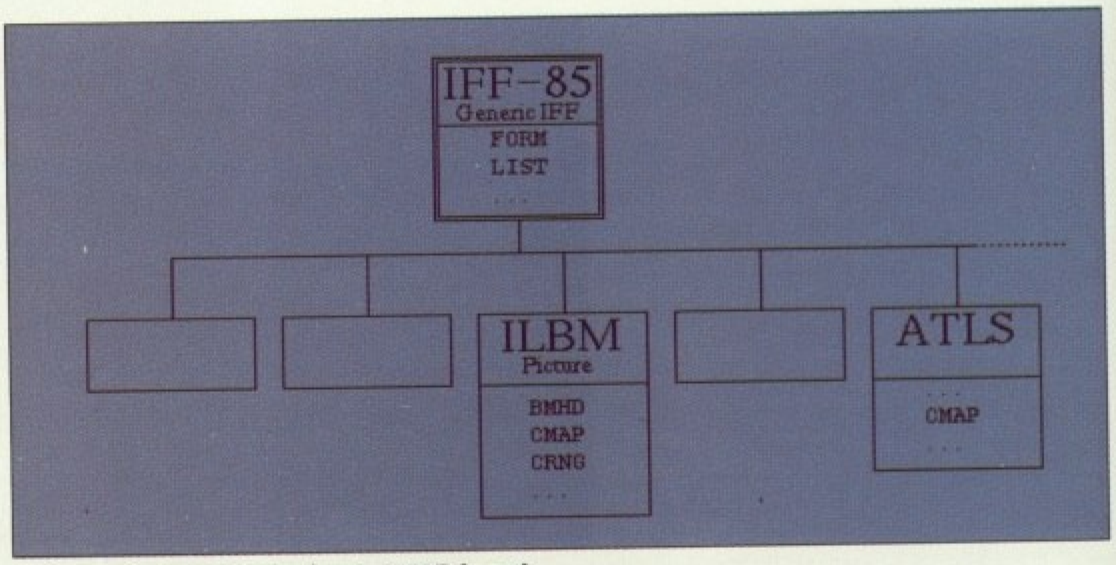
them back into the IFF format that almost all Amiga applications use.

In its simplest form, IFFedit would simply convert binary IFF files into hex listings with chunk names and sizes in text. All that recompilation would then involve would be a hex lookup, plus a bit of backtracking to ensure that chunk sizes were correctly set. This is just what IFFedit does if an IFF file is not of a type that it recognises. In this case I will refer to it as generic translation.

IFFedit does more than this though. If a file is of a type that is recognised, such as 8SVX or SMUS, then any standard data or property chunks will be translated in a way that reflects their meaning.

Non-standard chunks will still, of course, be translated using the generic method, provided that they conform to IFF-85 syntax.

EACH IFF file contains one FORM, LIST, or CAT, inside which may be nested other chunks according to the concrete syntax below (based on "Syntax Definitions", Exec Manual



FORM is universally defined, CMAP is not

App.B p.40 – this version sacrifices rigour for readability):

```
Chunk          ::= ID #{ UBYTE* } [0]
FORM           ::= "FORM" #{ Type (Chunk | FORM | LIST | CAT)* }
CAT            ::= "CAT " #{ Type (FORM | LIST | CAT)* }
LIST           ::= "LIST" #{ Type PROP* (FORM | LIST | CAT)*
PROP           ::= "PROP" #{ Type Chunk* }
```

Note:

[0] represents a pad byte which may be needed.

is a LONG type number stating the number of following {braced} bytes.

* means 0 or more instances (it's not a C-language pointer).

An equivalent syntax for the text version would read:

```
Chunk          ::= ID '{' CHAR* '}'
FORM           ::= "FORM" '{' Type (Chunk | FORM | LIST | CAT)* '}'
```

and so on...

Note that the pad bytes and byte counts have gone – alignment is unnecessary, and the delimiting braces now appear in the actual file, not just the syntax statement. Two cosmetic features have also been added – spaces and comments. They don't appear in the syntax diagram because they are skipped over at lexical analysis, before syntax analysis starts. Comments start with a semicolon, and extend to the end of the line on which they appear.

This example shows a sample use of IFFanalyse on a generic – in other words unrecognised – form. This is how the example form would appear if listed using "list NBRS.iff opt h"

```
0000: 464F524D 00000026 4E425253 4B594C49    FORM...&NBRSKYLI
0010: 0000000B 01234567 89ABCDEF 497CD100    .....#Eg....I|..
0020: 4A41534E 00000005 03122937 5900        JASN......)7Y.
```

IFFanalyse would show that this file is a FORM of type NBRS containing two chunks of type KYLI and JASN respectively. Chunk sizes are given (in decimal) as comments, and an Ascii representation of chunk contents is also given.

```
FORM { NBRS   ;size=38
       KYLI {    ;size=11
       01234567 89ABCDEF 497CD1                 ;.#Eg....I|.
       }
       JASN {    ;size=5
       03122937 59                              ;..)7Y
       }
}
```

If you were to edit this text file you would only need to concern yourself with material before the semicolon in each line. IFFsynthesise will calculate chunk sizes from the amount of actual data between "{" and "}" braces, so the fact that a size comment such as " ;size=38 " or Ascii comment such as " ;..)7Y " may no longer be correct after editing a file is unimportant.

An output like the one above is better than nothing, but it suffers from one drawback – it reflects only the structure of the data, not its meaning. If you're working with 8SVX sampled sound files, or SMUS music files, you're in luck.

IFFedit recognises these forms, and for each one it has a list of standard chunk types which receive special treatment. There is a separate list for each form type because chunk types are only reserved within a form type.

A FORM AUTH chunk happens to be the same as an 8SVX AUTH, but there's no rule saying it has to be. In particular, I might treat an ILBM BODY – if I get round to supporting ILBM – quite differently from 8SVX BODY. Any addition made to IFFanalyse must be made to IFFsynthesise as well, otherwise IFFsynthesise will fail to recognise some mnemonic which has been used to represent data.

An 8SVX chunk has eightstandard chunk types - VHDR, NAME, Copyright ("(c) "), AUTH, ANNO, ATAK, RLSE and BODY. Descriptions of these can be found in the Exec manual App.B pp.63-68, and are not given here.

NAME, Copyright, AUTH and ANNO are treated as text, so a name chunk:

```
4E414D45 00000006 73636F72 6532
NAME....score2
```

would appear as:

```
NAME {    ;size=6          "score2" }
```

ATAK, RLSE and BODY are translated generically. A future version could give mnemonics for ATAK and RLSE chunks.

VHDR has a special format:

```
56484452 00000014 00000400 00000000          VHDR............
00000000 6E190100 00010000                   ....n.......
```

appears as:

```
VHDR {     ;size=20
           oneShot 1024
           repeat  0
           PerHi   0
           PerSec  28185
           octaves 1
           comp    0
           volume  65536
           }
```

Mnemonic names, for example, "PerSec" are not case-sensitive, but they must appear in the order given above, and the decimal numbers after them are size checked by IFFsynthesise.

CODE CLINIC

Paul Holmes continues his look at the Amiga's unique filing system, the IFF. This month – properties, chunks and a chance for you to experiment with file formats yourself

Next month Paul looks at more examples where IFF can save you time and frustration. More chunks than a jar of orange marmalade!

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OK, so you've finally decided to take the plunge. You've bought yourself a Midi keyboard and a Midi interface for your Amiga, now all that remains is to buy yourself a suitable sequencer package.

But which is the right one for you? After all, they all seem to do basically the same job.

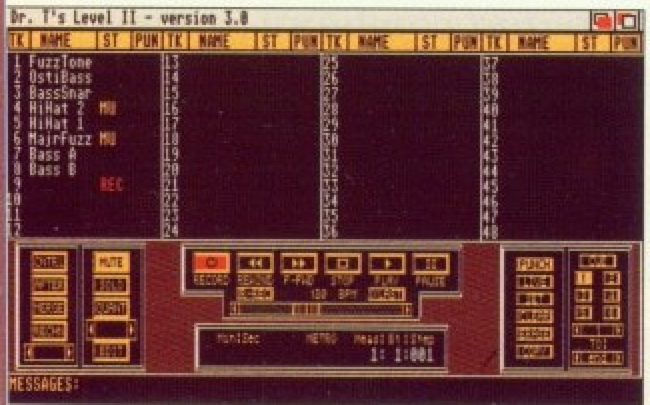
To help you make the right buying decision, *Amiga Computing* takes a look at the current cut of the crop of Amiga sequencers. This month we see what the market has to offer the "professional" musician. And for those of you with less demanding requirements, next month we'll be reviewing the range of budget sequencers.

KCS 3.0/DR.T £299/071-724 4104

Dr.T's software offer the most complete range of MIDI software available for the Amiga. Their catalogue includes a vast range of patch editors, sequencers to suite all budgets, SMPTE hardware and software, and even a range of Copyist tools for the production of scores from sequencer files.

KCS 3 is available in two versions, Levels 1 and 2. Level 2 has an extra Programmable Variations Generator that applies mathematical techniques to create rhythmic cycles. The heart of KCS 3.0 is a powerful 48 track realtime MIDI recorder providing similar recording options to MusicX. Sequence editing is carried using a MIDI data stream editor only – there's no fancy graphic editors here.

KCS is indeed a powerful sequencer, but it is rather unfriendly to amateur users. If some kind of graphic editing were included, then KCS would have been far more approachable. As it stands, it remains a tool for the hardened professional.



KCS – not the easiest to use

MUSICX/MicroIllusions-The Software Business/£230/ 0480 496497

MusicX is generally regarded as the number one sequencer currently available for the Amiga. Unlike the rest of the pack, MusicX was developed on the Amiga specifically for the Amiga, as a result it boasts easily the most friendly and well designed user interface of all.

The 250 tracks of real time MIDI recording offers such features as punch in/out, multichannel record, track merging and splitting, plus a lot more.



MusicX's editor takes some beating

Editing is via a friendly piano roll-like bar editor and a more conventional MIDI stream editor. The current release does not offer any form of score editing, but MicroIllusions have promised both this and lots more in a future release.

Also worth a mention is MusicX's powerful filters page which acts like a dedicated MIDI patchbay, allowing you to redirect MIDI events and even assign events to individual keys using the keymap editor.

For those of you with synthesisers, MusicX offers a powerful librarian page to store synth patch data. Also included are a range of patch editors for various synths including the Roland D50.

MASTER TRACKS PRO/ Passport/£289/071- 724 4104

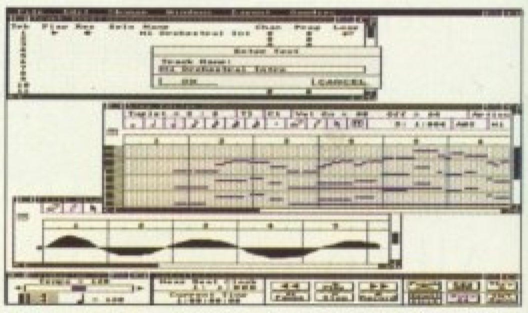
Until recently, Master Tracks Pro was Passport's only release for the Amiga. Although it is not that well known in this country, the Americans love it. Master Tracks is available on a number of different systems, including the Mac, Amiga and ST. All share a common, graphical-orientated user interface based around the Mac Finder system.

Master Tracks offers 64 tracks of realtime recording, complete with some of the most powerful editing options available within an Amiga sequencer.

The main workhorse editor is the step editor, which is almost identical to the MusicX bar editor. The program also has a unique song editor which can be used to built up songs from patterns.

Other editing tools include a useful Fit Time option which can be used to compress or expand a sequence to fit a particular time space – very useful when providing music for video. Also on offer is a *humaniser* that attempts to make sequences more human by making them less rigid.

Master Tracks is a powerful music composition system that gives MusicX a run for its money – a studio proven system that is well worth investigating.



FOR most programmers, composing tunes for their gaming creations meant only one thing – Sound Tracker. During its brief history, Obarski's music editor has become famous among both crackers and demo writers.

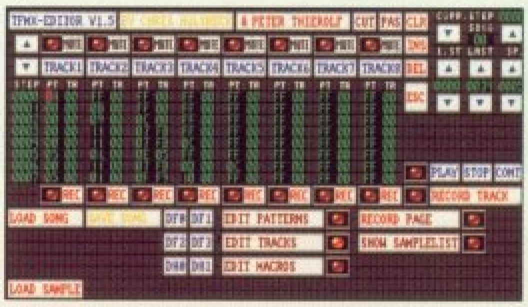
Chances are that even the games you buy contain tunes produced using Sound Tracker. However, due to its legal position – nobody seems to know whether Sound Tracker is now PD or not – the program has been almost impossible to obtain.

A new (legal) contender for Sound Tracker's throne is TFMX from the German software house of DemonWare. As the manual goes to great lengths to stress, TFMX was designed exclusively for the production of music for Demonware's own game titles. After realising what a good product TFMX was, Demonware have kindly made TFMX available to a much wider audience.

It uses a pattern-based editing system very similar to conventional drum machines. Songs are constructed by building up patterns that are then combined to form the final song.

Individual patterns are constructed by entering hex values representing the note to be played and the sample macro with which it is to be played. You can specify both the volume of the sample and which channel it is to be played through , a handy facility for creating stereo bounce effects.

Directly after a note has been entered it is followed by a further command that specifies whether another note is to be



TFMX: A legal Soundtracker?

MUSIC NEWS

No sooner do we learn of MicroIllusions' plans to develop version 2 of MusicX than sources close to the company have discovered that another upgrade is to be released to bridge the gap between MusicX 1.1 and 2.0.

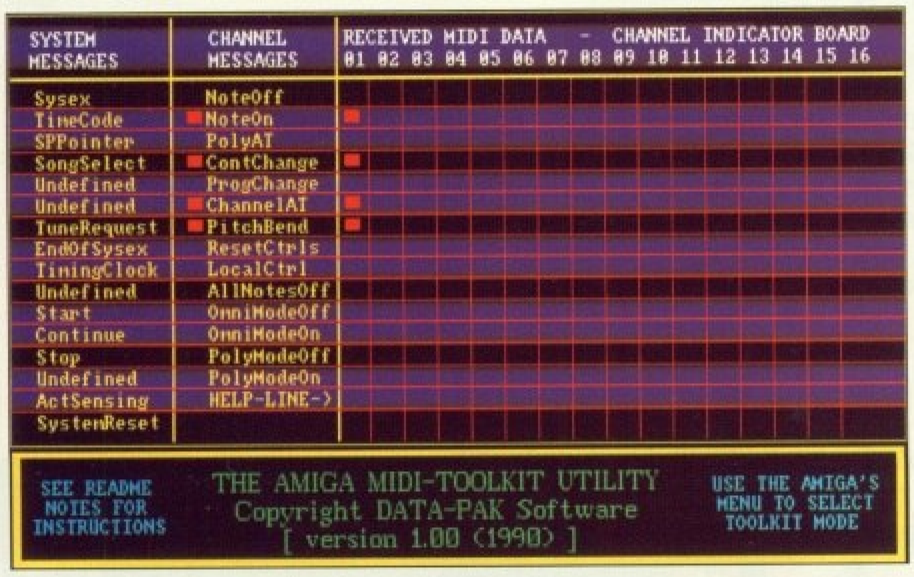
MusicX 1.3 (nobody seems to know what happened to 1.2) is now in the hands of beta testers, but should be available soon. According to our sources, there are very few additions apart from a number of new libraries for the librarian page and perhaps an extra page or two to provide extended control over the MIDI data flow.

Homegrown MIDI software is something of a rare commodity, but Data-Pak software of Rochford in Essex want to change all that. Data-Pak's first product is a powerful MIDI diagnostics system written specifically for the Amiga.

What makes this product so remarkable is the price – a mere £9.99.

It's all too easy to get tied up in MIDI leads, but with Data-Pak's MIDI-Toolkit, you can keep track of your system with ease. The program offers comprehensive MIDI diagnostic tools which include realtime analysis of incoming data, a graphical display of the amount flowing through a MIDI network, lead checking and a facility for checking standard format files.

Can you afford not to have the MIDI-Toolit keeping check on your system? For more information, give Data-Pak a bell on 0702 542229 and they'll be more than happy to sell you a copy.



The best way to learn about MIDI is to use it...

New to the world of Midi? Superstar Jason Holborn has a word or two of advice for anyone starting out in the music biz

played (and when) and if TFMX should wait for the sample to stop playing. Once a pattern has been defined, a simple STOP command terminates it.

One of the most impressive aspects of TFMX is the amount of control it offers over samples. Using its powerful macros facilit you can define whether the sample should be looped, its length and so on.

You can also shape it still further by taking advantage of TFMX's sample manipulation tools such as envelope shaping _ which allows you to create analog-type LFO effects – portamento and even vibrato (who needs an effects unit?).

Once you've created your game tune, you'll no doubt want to use it in your own programs – after all, that's the whole point of the exercise.

Unlike programs like Sound Tracker, TFMX doesn't include any source code for playing the tunes, instead you must call a separate player program from within your program. While this is great for Basic programmers, it is really unacceptable for assembler programmers who "hit the metal". But then again, all you've got to do is dissassemble the player program!

For a program that claims to be the



be all and end all of game music creators, it is surprising that Demonware didn't include some form of MIDI support. Even the PD composer Game Music Creator supports MIDI, so Demonware would be well advised to include it in a future release.

To be fair, the programmers have hinted that they may produce a professional version of TFMX that includes MIDI support, but that will probably carry a much higher price tag.

As it is, TFMX is still a most impressive product that makes the job of composing music for games a considerably easier task. Those of you used to Sound Tracker may find the editing system initially daunting, but you'll soon grow to favour it. Highly recommended.

TFMX
£44.95
The Software Business
0480 496497

Next month: Reviews of Passport's new budget sequencer system Trax. Plus, of course, even more news and gossip from the Amiga music scene.

IF you only use your modem for typing out little messages to people, you are only skimming the surface. To get full use from your deck, you need to get into uploads and downloads.

Imagine you have heard of a really cool piece of PD software. You want it. Perhaps a PD library will advertise it in the magazine, so you post of your dosh ,wait a week and back it comes.

Wouldn't you rather have the software five minutes after deciding you wanted it? If you have a modem, you have the technology. All you have to do is ring up a local BBS and download it in seconds. This is the age of Information Interchange and you're part of it.

MOST bulletin boards have a software *bank* of sorts, where you can make a withdrawal or – even better – a donation. Some systems make rules about the number of withdrawals you can make, but if you can manage to stick to one upload for every download you'll be Mr. Popular.

To get the software, first find a local BBS. Get on-line and leave a nice message to the SysOp. He'll check you out, normally within a day, and grant you downloading privileges. You're all set.

Log on, with a blank disk ready and waiting to store your new software. Get to the section in the BBS where all the files are kept. Select the *Download* option. From a pull-down menu in your software, select the *Download* option too. All going to plan, you'll get a box with numbers, estimated times and sizes appearing. Now wait.

When you've finished, log off nicely. Now get to a SHELL and examine your prize. Chances are it's been archived. This means it's been squashed to take up less space, and therefore less downloading time. Before you can use it, you'll need to un-arc it.

There are several popular arcing formats: .ARC, .ZOO, and .ZIP and .LZH to name four. To un-arc them, you'll need the matching software: PD programs such ARC, ZOO, ZIP and LHUNARC. These programs should all be available – in un-arced format – from the BBS. They should be the first programs you download.

In the old days some systems made the mistake of holding two un-arcing programs in their library: each archived by the other. Not much use.

Most of these utilities are CLI driven user-hostile beasties. Unfortunately, this is the way the comms world is. You're going to have to roll up your sleeves and do some work.

To get a brief inkling of a clue what to do, you use the programs from the CLI without parameters or with question marks. Nine times out of ten they will give you some helpful info.

They normally work along the lines of:

```
ARC -X FILENAME.ARC
```

All you have to do is sit next and watch as the program is re-constituted before your eyes. Of course, you only have to un-arc them once. From then on they are just like any other piece of software. Except you got it so fast.

ASCII file ends. Stop upload.

+++
ATh

Before you upload...

IF you are uploading a program on to a BBS there are several points to bear in mind:

- Do you have permission to do so? If you upload a copyrighted program, you are breaking the law.
- Have you included all the files belonging to a program? This means *all* data, binary and *readme* files?
- Have you done a thorough virus check on the software you are uploading? The consequences of not doing so are too horrible to contemplate.
- Have you archived all the files? Doing so means they take less time to upload, consume less storage space on the host system and take less time to download. Everyone is happy.

Protocols

ANYONE who has been looking at the pull-down menus in their comms software will have noticed options such as X-Modem, Y-Modem and Z-Modem.

These wonderfully named options specify the different protocols which can be used to upload and download files. You may ask yourself why you actually need a protocol in the first place...

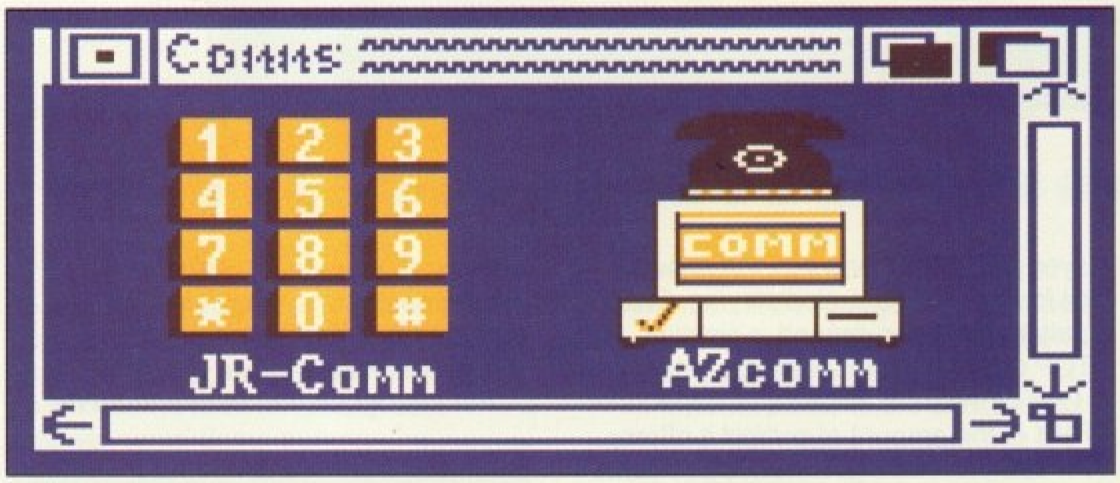
There are to types of data as far as Comms is concerned: Text and binary. Text files are what you're reading now – words. The best way to store the words for later perusal is to select a menu option such as "Ascii Capture". This will *spool* data to disk or ram, where you can examine it later off-line.

Binary data is what programs are made from. You can't download programs as text files without major problems. There must be a better way. There is, and it involves the use of X,Y or Z-Modem. All the systems work by collecting the binary data into small packets, and sending it in bursts. The data is automatically checked, to prevent even a single byte from being corrupted.

You might not mind if a letter in a page of text if wrong, but if a machine code instruction in a downloaded program has got muddled, you can say hello to the guru.

Z-Modem is the best system, as it works fastest and can automatically switch on uploading and downloading. You should always use it if you can.

All the popular comms packages now have a Z-Modem option, though JrComm's is the best. Failing that, either of the other two protocols will work fine.





Comms Gossip

OOPS – just as we were going to press a few mistakes in last month's BBS list came to light. Please note changes in the listings for the following boards: Amiga Connection, Yukon Ho!, Alliance (with the sexy Jessica).

Also Code-o-matic went off the ether following a nasty encounter with scourge of deck-cowboys everywhere, Mr. BT. Sysop Oli Smith has done a Macarthur and is back on a new line.

Coninuing the 01 for Amiga saga we must report that both FAST and CBM are no longer persuing their fraud inquiries. This is due to the lack of any hard evidence.

This is by no means intended to be an exhaustive list, but is as accurate and complete as was possible in the time available. Sysops are welcome to contact the magazine if they have details of further boards or if any of the details shown here are incorrect .

AMLINK BBS2 021-778 5868
V21/22/22b/23 24Hrs Birmingham
Sysop: Martin Creighan

BARNEY'S RUBBLE 021-441 1801
V21/22/22b/23 24hrs? Birmingham
Sysop: Jon Morby

MABBS 021-444 8972
V21/22/22b/23 24hrs Birmingham
Sysop: Mark Caro
Amiga orientated + PCBBC.

PLUG-OLE 021-472 0256
V21/22/22b/23 24hrs Birmingham
Sysop: 'Plugger'
It's an experience everyone should try

LINENOISE 031-332 6747
V22/22b 8pm-8am Edinburgh
Sysop: Andy Bain

BREAKTHROUGH 051-734 5817
V21/22/22b/23 24hrs Liverpool
Sysop: Jim Hamilton
Everything

P'S & Q'S 051-236 3105
V21/22/22b/23 24hrs Liverpool
Sysop: Alan Smith
Upload bureau for typesetting.

ASPECTS 061-792 0260
V21/22/22b/23 24hrs Manchester
Sysop: Dave Gorski
Excellent SIG for Amiga

D.I.E. 061-434 9907
V21/22/22b/23 24hrs Manchester
Sysop: Simon Thornton

ALLIANCE 061-339 0337
V22/22b 10pm - 7am Manchester
Sysop: Snoopy Co-Sysop: Jessica (kissy kissy)

HARLEQUIN 061-945 3612
V21/22/22b/23 24hrs Manchester
Sysop: Tony Grimshaw

061 for AMIGA 061 7994922
V21/22/22b MNP 4pm-11pm Manchester
Sysop: Andy Grifo
Over 200 files online

071 for AMIGA 071-377 1358
V21/22/22b/23/32 24hrs London
Sysop:Tony Miller

HAZZARD BB 071-737 0505
V21/22/22b/23 8pm-7am London
Sysop: Ben Amure

POLYNET BB 071-580 1690
V21/22/22b/23 24hrs London
Sysop: Eileen McCabe
Disabled orientated.

AMIGA CONNECTION 081-503 0593
V21/23 7pm-9am London
Sysop: Paul Roffey (NOTE NEW NUMBER)

London Guest House 081 7480974
V21/22/22b/23/32 24Hrs London
Sysop: ???
Yet another Paragon BBS

CIX 081-399 5252
V21/22/22b/23 24hrs London
Sysop: Hangout for poseurs and manufacturers. Subs only

DOMAIN BBS 081-773 2422
V22/22b 24hrs London
Sysop: David Boardman

HEALTH-DATA 081-986 4360
V23v 24hrs London
Sysop: Dr Chris Dobbing
Medically orientated.

DATASEL/WANDERLAND 081-680 5330
V23 24hrs London
Sysop: Ted Greene

MUG. Also: 01-681 8081 W/d:
24hrs. LONDON

METROPOLIS 081-519 1055
V21/22/22b/23 24hrs London
Sysop: Terry Sinclair

PACKET BBS 081-547 1479
V21/22/22b 24hrs London
Sysop: Ted Batts
Packet Radio orientated.

NO ESCORT REQUIRED 081-200 3817
HST 24hrs London
Sysop: John Catlin

ORGANIC GARDEN 081-464 3305
V21/22/22b/23 24hrs London
Sysop: Bob Campion
Horticulturally orientated.

BIG BANG BURGER BAR 081-420 6356
V21/22/22b/23 24h London
Sysop: Paul Roberts
Belgium man I'll get my towel. AMOS section

PROMETHEUS 081-300 7177
V23v 24hrs London
Sysop: Barry Spencer
Astronomy orientated.

ARGUS PROJECT 091-490 0327
V21/22/22b/23 24hrs Tyneside
Sysop: Graham Denman
Radioactivity monitoring project.

PUBLISHING SHOP 091-261 5228
v21/22/22b/23 24Hrs Tyneside
Sysop: Roger Booth
Dtp and stuff

KERNOW BB 0209 821670
V21/22/22b/23 24hrs Kernow
Sysop: Dave Randle
An Opus board

INDEX LINKED 0227 770403
V21/22/22b 24hrs Whitstable
Sysop: Carl Ricketts
CP/M as well as Amiga stuff here.

CLAPHAM JUNCTION 0234 64261
V21/22/22b/23 24hrs Bedford
Sysop: Mark Lewis
V22bis on 0234 213510.

C-SIDE 0242 222981
V21/22/22b 24hrs Cheltenham
Sysop: Tim Hawkins
C orientated.

ANDROMEDA GALAXY 0243 379430
V21/22/22b/23 24hrs? Emsworth
Sysop: John Cheyne

BITMAP BROTHERS 0245 413728
V21/22/22b/23 24hrs Chelmsford
Sysop: Mike Montgomery
Well Chelmsford had to have something didn't it.

YUKON HO! BBS 0232 768163
V21/22/22b/23 24hrs Belfast
Sysop: Mark Kerr Co-Sysop: Jim Rowan
Pre release game demos and Echo Mail

ADRIAN'S BBS 0247 465385
V21/22 24Hrs Co.Down
Sysop: Adrian Wilson
New but Ulster BBS

AMIGA BOARD 0268 510495
V22/22b/23 24hrs Canvey Island
Sysop: Keith Bloom ('Crashman')

MAGNUM 0274 547006
V21/22/22b/23 24hrs Bradford
Sysop: Keyop Troy

CASTLE BBS 0276 691872
V21/22/22b/23 24hrs Camberley
Sysop: Neil Gossage

BLITTER 0292 671638
HST 24hrs
Sysop: Derek Stracey

AMIGA SOUTH-EAST 0293 28464
V21/22/22b/23 24hrs Crawley
Sysop: Kevin Cannell
Amiga/ST/PC board

SHADES 0342 810905
V23 24hrs East Grinstead
Sysop: Neil Newell (Hazeii)
MUG. Plus another MUG: 'Trash' - type PCLINK at .

Knightowl 0375 375190
V21/22/22b 24Hrs
Sysop: Paul Gooch
Official UK rep. for Paragon.

END TO END 0376 84644
V21/22/22/23 24hrs
Sysop: Glyn Cornfield

DARK HALO 0392 434477
HST 24hrs Exeter
Sysop: Stuart Henderson

NORTH YORKS QBBS 0423 868065
V22/22b? 24hrs Niddersdale
Sysop: Mike Wigmore
Host of machines supported

PISTON POPPER 0424 853361
??? 24hrs Hastings
Sysop: Peter Burnett

CV DATABASE BB 0427 810211
V22/22b 24hrs Gainsborough
Sysop: Martin Jones
Jobs/CV database.

LOFT 0442 230461
V21/22/22b/23 24hrs Hemel Hempstead
Sysop: Martin Carter

SCS ONE 0444 236002
V22b 24hrs Who knows?
Sysop: Chris Stone

GAUGONZOLA BBS 0453 511112
V21/22/22b 24hrs Sharpness
Sysop: Lawrence Freeman
Amiga orientated.

BETELGEUSE 5 0463 231339 RB
V21/22/22b/23 24hrs Inverness
Sysop: Hugh Allan
This is a board that has been described as zany.

KASHMIR'S BBS 0472 347882
V21/22/22b/23 7pm-8am Grimsby
Sysop: Kashmir perhaps?
Runs on BBS-PC

Code-O-Matic 0472 360811
V21/22/22b 24Hrs Grimsby
Sysop: Oliver Smith
Origin of the BBS Pub and home to many new ideas

GOURMET 0474 536654
V21/22/22b 24hrs Gravesend
Sysop: David Banes
Catering Orientated.

FAMILY SKELETONS UK 0480 812097
V22b 24hrs Huntingdon
Sysop: Bill Hamilton
Genealogy orientated.

HAMNET 0482 465150
V21 24hrs Hull
Sysop: Joe Lawrence
Amateur radio orientated.

HAL BBS 0488 681069
V21/22/22b/23/32 24Hrs
Sysop: Ned Benjamin
Another Paragon board

SIRIUS II 0494 778425
V21/22/22b 24hrs Amersham
Sysop: Martin Brown

CLIFF'S CORNER 0502 518274
V21/22/22b/23 24hrs Lowestoft
Sysop: Cliff Jones

END ZONE 0524 752245
V21/22/22b/23 24hrs Lancaster
Sysop: Adam Purnell

BOGGIN 0532 483563
V23/23v 9pm-8am Leeds
Sysop: Russell Green

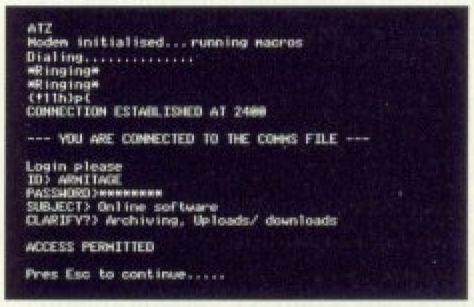
PLUS AND MINUS 0559 322766
V21/22/22b/23 24hrs Lampeter
Sysop: Tony Jowers

MISSION IMPOSSIBLE 0602 654329 HST
24hrs Nottingham
Sysop: Keith Barnes
A Wildcat board

PCAMIGA BBS 0602 735119
V22/22b 6pm-M't Nottingham
Sysop: Mark Potter
A fabulous furry Opus board

EUREKA GATEWAYS 0603 250689
V23/23v 24hrs Norwich
Sysop: Carl Wright/Roger Miah





HQ of Channel-X.
MADNESS BBS 0603 300947
V21/22/22b/23 24hrs Norwich
Sysop: Ted Jackson

K-WOOD 0608 83458
HST 24hrs Great Tew
Sysop: Clive Waller

DEEP THOUGHT 0634 683696
HST/V32 24hrs Rochester
Sysop: Paul Boakes
Fidonet 2:252/105.

EDDIE'S BBS 0635 71324
V21/22/22b/23 24hrs Newbury
Sysop: Eddie Seymour
PCSTAmgBBC.

WHITE LIGHTNING 0635 37259
V22/22b 24hrs Newbury
Sysop: Richard Darnell

FOX'S DEN 0689 27085
V21/22/22b/23 24hrs Orpington
Sysop: Barry Freeman
Subs for FULL access.

BIKE SHOP 0705 827764
V22/22b 24hrs Portsmouth
Sysop: Dave Horton.

GABBS 0705 524805
V21/22/22b/23 24hrs Gosport
Sysop: Stephen Cole
Formerly Ape-House.

LAMPLIGHT QBBS 0705 811531
V21/22/22b/23 24hrs Portsmouth
Sysop: John Lambon

MICRODEAL 0726 65422
V21/22/22b/23 24hrs St.Austell
Sysop: Mark Prigg
Runs on Michtron software surprise surprise.

CRITICAL MASS BBS 0727 56939
V23/23v 10pm-6am St Albans
Sysop: Grahame Treliving
Formerly Aardvark's Realm.

HEARTBEAT 0734 352032
Reading
Sysop: Sue Waring

Speed BBS 0734 475549
V21/22/22b 24 Hrs Reading
Sysop: Stephen Brazil
Relatively new but expanding fast!

AMIGA SHACK 0737 361178
V21/22/22b/23 24hrs Epsom
Sysop: Peter Debono
Amiga and PC interest. Runs Tag-BBS

JOLLY FISHERMAN 0754 67796
V21/22/22b/23 24hrs Skegness
Sysop: Martin Parker
A Paragon Board (so it must be good)

EMPYRION 0792 580781
V21/22/22b/23 9pm-6am Swansea
Sysop: David Westron
Formerly Swansea Amiga BB

Wayfarer 0846 607665
v21/22/22b/23/32 7pm - 7am
Sysop: Herbie (for one reason or another)
Good BBs but it gets lonely - give it a call

WELLAND VALLEY BBS 0858 66594
HST 24hrs Market Harboro'
Sysop: Eddy Ralphson

BAR 0904 642560
V21/23/23v 24hrs York
Sysop: Darren Soothill

DIGGERTEL #1 0925 411265
V21/22/22b/23 24hrs Warrington
Sysop: John Balshaw

VIKING BBS 0950 60434
V21/22/22b/23 24hrs Shetland Isles
Sysop: Graeme Story
Special areas for disabled and handicapped

TREASURE ISLAND 0992-447273
V21/V22/V22b/V23/V32 24Hrs Herts.
Sysop: Jonathan Morris
Still nothing to do with animals

SOMEBODY somewhere once said "The secret of comedy is timing". I can't remember who, but I bet you that Green knows. He seems to know all these famous sayings and who said them. I also bet that Green doesn't actually remember them all, but has a little book of famous sayings that he refers to in times like this.

Anyway, back to the matter in hand. The secret of Amiga coding is timing. I've had quite a few people say to me recently that they can get a picture on to the screen in machine code, but when they try and move it, it goes completely wrong, glitching all over the place and looking like a bad ST impersonation.

The problem is that on the Amiga – and most other computers for that matter – the screen is redrawn 50 times a second (in Europe, anyway). If you move something on the screen while the screen is being drawn, you will get half of the old picture (before moving) and half of the new picture (after moving). This leads to the glitches.

What you have to do is time your code so it only changes the screen when it is not being displayed. In other words, in the time between the end of drawing one frame and the begining of drawing the next. This is called the vertical blank period.

You don't have much time to play with, for your movement routines have to be fast enough to execute and finish before the end of the vertical blank period. Other techniques – double buffering, for example – can give you more time to play with, but I won't go into that now.

There are several ways of making sure your code only runs in the vertical blank period. When that point is reached is reached the Amiga generates an interrupt, telling the 68000 to stop what it is doing and go and run a routine somewhere else in memory. You can set up your own Vertical Blank Interrupt (VBI) routine which handles the movement for you. This is probably the best way to deal with such a routine, but setting up interrupts is a bit fiddly, so I'll leave that until next month.

You will be pleased to know there is a much easier way to wait for the vertical blank period. A pair of hardware registers, VPOSR and VHPOSR, if read together show exactly where the video beam that redraws the screen is. All you have to do is read this and wait for the last line at the bottom of the screen (the 305th line down the screen on European Amigas).

The following piece of code will enter a loop and wait for the vertical blank period:

```
VPOS equ $dff004
loop:

MOVE.L VPOS,d0                          ; Get beam position
AND.L  #%11111111100000000,d0           ; Want vertical component
LSR.L  #8,d0                            ; Shift it into lower byte
CMP.W  #305,d0                          ; Have we reached the bottom?
BNE.S  loop                             ; If not, loop back
```

You should put the code to animate your graphics after this routine. With a bit of luck it should work glitch-free. The obvious downside to this routine is that it wastes an awful lot of processor time. You should run all your non-screen updating routines, such as calculations, before it, as they don't need to be synchronised to the screen.

Of course, we don't have to wait for the bottom line. You could quite easily wait for the first line, the 17th, the 182nd and so on.

There aren't all that many useful applications of this technique, but here's an almost harmless example of another use of VPOS.

It changes the background colour at several positions down the screen to give a multicoloured background. This in itself is pretty pointless, as the copper can do a much better job of it, but it's an easy example from which to learn.

HAVING problems with strange unwanted vertical bars of rubbish appearing over your screen? If you are, you're having sprite problems. Here's one way to fix it. Add this instruction to the begining of your code:

```
clr.l 0
```

and stick this on the begining of your copperlist:

```
dc.w  $120,0,$122,0,$124,0,$126,0
dc.w  $128,0,$12a,0,$12c,0,$12e,0
dc.w  $130,0,$132,0,$134,0,$136,0
dc.w  $138,0,$13a,0,$13c,0,$13e,0
```

What this does is clear the only long-word in memory that is officially unused – at location zero – and points all the sprites to that empty sprite, so nothing is displayed.

You may have tried to turn off sprite

```
; Almost harmless example of VPOS wait
        move.l 4.w,a6
        jsr Forbid(a6)          ; turn off multitasking

stripes
        move.w  #43,d1
        bsr     vpwait          ; wait for scanline 43
        move.w  #3,colour0      ; change background colour to $003
        move.w  #93,d1
        bsr     vpwait          ; wait for line 93
        move.w  #5,colour0      ; change colour to $005
        move.w  #143,d1
        bsr     vpwait          ; wait for line 143
        move.w  #7,colour0      ; change colour to $007
        move.w  #193,d1
        bsr     vpwait          ; wait for line 193
        move.w  #9,colour0      ; change colour to $009
        move.w  #243,d1
        bsr     vpwait          ; wait for line 243
        move.w  #$b,colour0     ; change colour to $00b
        move.w  #293,d1
        bsr     vpwait          ; wait for line 293
        move.w  #$d,colour0     ; change colour to $00d

        btst #6,$bfe001
        bne.s stripes

        move.l 4.w,a6
        jsr Permit(a6)          ; turn on multitasking

        rts

vpwait:         move.l VPOS,d0
        and.l  #%11111111100000000,d0
        lsr.l  #8,d0
        cmp.w  d1,d0
        bne.s  vpwait
        rts

VPOS    equ $dff004
Forbid          equ -132
Permit          equ -138
colour0 equ $dff180
```

DMA, and found that every now and then you get a stationary vertical bar running down your screen. If you turn off sprite DMA at the exact moment the sprite is being displayed it will continue to display the last line of sprite data forever.

To disable sprite DMA properly you have to use – yes, you guessed it – a VPOS wait loop. Simply wait for the last line, 305, before disabling the sprite DMA and you can avoid hitting the sprite, as it will never reach that low.

IF YOU are ever unfortunate enough to listen in to a crowd of programmers talking, they will sooner or later (usually sooner) mention how few raster lines their latest routine takes. Raster lines, in this particular instance, are a measure of time – it's the time taken for the video beam to trace one line across the screen. As it draws a whole screen of over 300 lines every 50th of a second, it's not a really large measure of time, in fact it's only 63 microseconds.

It's quite simple to do – turn the background colour to red, run your routine, and turn the background colour to black when it finishes. You will see a red flash on the screen, and you count the number of red lines. This gives you the speed of your routine in raster lines.

You have to run this routine continuously, once every frame, otherwise the screen will just flash once – for 1/50 of a second – and stop. You'll have to count the lines pretty quickly to make use of this ploy.

How do you do it? Yet another application for this wonderful VPOS wait routine. Here's the basic theory. I'll leave the code for you this time (and here's one I *didn't* prepare earlier...)

```
 WAIT for line 150 (somewhere in the
middle of the screen, to make it easy to
see)
  CHANGE BACKGROUND TO RED
  BRANCH TO YOUR SUBROUTINE
  CHANGE BACKGROUND TO BLACK
  WAIT FOR LINE 140 (to make sure
one whole frame has appeared)
  JUMP BACK TO BEGINING.
```

Why do I wait for line 140 before jumping back to the beginning? If your routine is *very* fast it may only take a fraction of the line to finish. In this case, it will jump back to wait for line 150, and as it will still be line 150 it will go on to execute a second time in one frame, giving a misleading raster line time.

If you're feeling bored you can experiment with different colours instead of red. You've got 4095 to try ($000 would be a little pointless).

There are a few flaws with the raster line timing method. You'll still find programmers saying "My blitter stack interrupt routine takes that" (holding forefinger and thumb a very short distance apart) "much time". This is a bit pointless, as you don't know whether he is using a 9 inch monitor or a 26 inch monitor.

Go up to them and say, "Yes, but how many lines is that?". You can look very smug and they'll be very embarrassed. Ten to one they're using a TV and can't count the individual lines without getting a migrane.

THERE IS nothing more annoying than a piece of code that just refuses to work. It's a really good feeling when a routine works first time, but with long and complex ones that doesn't happen very often.

A good 80 to 90 per cent of bugs can be trapped with a decent debugger, such as Monam 2 from HiSoft, but some bugs are so cleverly hidden and so perfect in design that you have to resort to very special tactics to dig them out.

Here, for the first time, I reveal some of these alternative debugging practices:

Print out your source code: You will often find the problem is obvious by the time it is completed. This doesn't have anything to do with what's printed on the paper, it's just that the time taken to print out the source gives you time to think.

You really need a cheap old noisy dot matrix printer for this, laser printers work too quickly, and they don't make the right noise.

Some people have successfully debugged by removing the ribbon and printer paper on their machine, printing nothing. The time delay and the noise are still right, but you don't waste valuable printer paper and ink.

Invite a friend round: Every coder knows some annoying little person who comes round, stands behind you looking over your shoulder, who knows almost nothing about programming but comes out with statements like "Shouldn't that be a D0, not an A0?" every now and then while your typing.

What's even more annoying is that they are more often than not right. A useful debugging technique, but it has a high embarrassment factor.

The kludge: This is the dirtiest of debugging techniques. Frowned upon by almost every decent programmer – but a lot resort to it in a dire emergency – it involves logic which goes something like this:

This code is theoretically perfect so it should work. It doesn't. If I insert something that is theoretically unnecessary, or even theoretically wrong, it may, with a bit of luck, fix the problem.

Good examples of kludges are



Jolyon Ralph cures the coding blues with his previously top secret bumper bug-busting hints

randomly clearing registers at the beginning of a routine, or changing the length of a DBRA loop by +1 or -1 "just to see what it would do". The whole kludge ethic is based on the philosophy that "As long as the program works, I don't have to understand *why* it works".

Naturally, this is rather repulsive to most programmers, except when faced with a tight deadline involving sums of money. A very few programmers code purely by the kludge method, leading to unbelieveably badly-written code. I've seen some of their games.

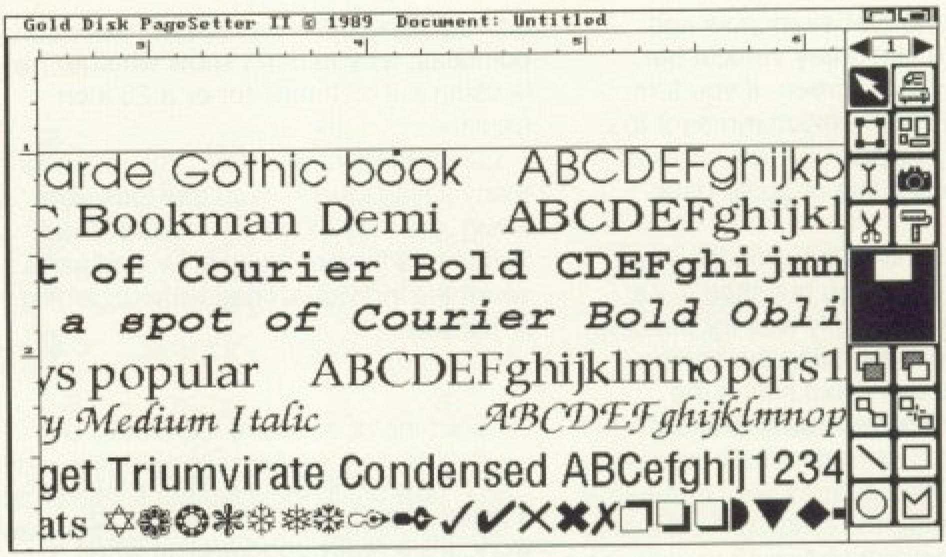
The US foreign policy debugging method: This was something I developed when programming the Spectrum in Z80. I noticed that it was taking 20 per cent of my time to write a routine, and 80 per cent to debug it. I also noticed that about 40 per cent of my routines worked first time (If only it was that way now!).

So I worked out that debugging was a waste of time. All I had to do was write a routine, if it worked, great. If it didn't, nuke it and start again.

If I could narrow down the error to a certain line, it was a simple matter of deleting the line, and the three lines above and below it, and rewriting it.

This technique definitely works, but the only problem is it makes your fingers ache.

Next month: More of the same, with loads of interesting facts about interrupts and copperlists. Don't you just love it? Answers on a postcard please.



You can convert the font to a bitmap for inclusion into a paint program such as DPaint

NOT long after you discover the joys of restyling pages of your favourite publications and *Amiga Computing*, you will discover what a severe limitation the lack of a corporate sized budget is.

Picture this. The latest version of the Conlig gazette lies before you, resplendent in hi-res interlaced mode on your wonderful monitor.

Your subscribers, recently reaching the heady heights of double figures, are eagerly awaiting the next edition complete with witty insights on the Ring Road and severe condemnations of Bangor Marina.

This is the point at which you realise that – short of buying an extra 20 monitors and becoming the first useful cable network – you have to find some way of getting it on to nasty old fashioned lo-tech paper.

Now,I don't know you really well, mostly we've never met, but I suspect that you're the sort of person who would be only truly happy with at least 300 dpi output (about the resolution of a laser printer) and preferably a lot better. Presumably you reckon you can't afford this. You may be wrong.

If your DTP package is capable of producing Postscript output – in other words you have Pro Page or Pagestream2 – you are, as they say, in business.

Postscript is a language. Unlike C, Pascal, BASIC and Swahili it is dedicated to the description of shapes. All the nice curves of your 72 point fonts, all the precise and functional beauty of your keylines ,are just a few sentences in Postscript.

The advantage of Postscript is that because it describes the shapes rather than the individual blocks that make up the shapes, there is much less to it, and yet it is more powerful.

For example, the German word Manuskripteinsendung (literally translated "manuscript in sending") is precise but not as easy to say, write or print as the English equivalent "submission". Each item of a postscript file is likewise the equivalent of countless bits of data in a bitmap. The information density is greater. This means the files are smaller, print faster and are unlikely to give your output device headaches.

Of course your output device is consequently going to cost twice as much to do the same job.

So the alternative to taking out a mortgage on your immediate family to pay for such a device is to use someone else's. Cunning eh? This is where the most important feature of Postscript comes in – it is a universally recognised language – PCs can speak it, Macs can speak it – it's like Esperanto, only it works.

Since most of the backward thinking outdated publishing in this country is done on either PCs or Macs using Postscript devices there is wide support for this format. Unfortunately at the moment you are unlikely to find a DTP bureau that will handle Amiga disks – most of these silly people haven't even heard of Amigas!

Obviously a high degree of cunning is called for. You have to fool these people into thinking they are dealing with an ordinary PC or Mac file. The best way to do this is to select an IBM format output, and print your document to disk

For those of you who asked, here is a brief glimpse of those wonderful scalable fonts from Gold Disk's Outline Fonts package.

Not only are they are a useful addition to PagesetterII, Pro Page or Prodraw, but they even come with a nice conversion program that will turn them into a bitmap font (as used by almost every art package going and a good number of word-pros) at virtually any point size.

The range includes additional variants to the ones included with the Gold Disk packages and lots of others besides like Avant Garde, Bookman, Century Schoolbook, Courier, Palacio, Zapf Chancery and the incredibly useful Symbol and Zapf Chancery fonts.

A sample collection is reproduced here for your entertainment. I'd like to point out that this output – from a Panasonic KX-P4420 under HP Laserjet emulation – has obviously been optically scanned, which will undoubtedly introduce some distortion. The illustration should be taken as a guide to the style and only loosely as an indication of the quality of output possible.

This is Avant Garde Gothic book ABCDEFghijkp123!"£$&
and this is ITC Bookman Demi ABCDEFghijklmp123+-
here is bit of Courier Bold CDEFghijmno23!£$&
followed by a spot of Courier Bold Oblique ABcd
Palacio is always popular ABCDEFghijklmnopqrs123!"£$%
As is Zapf Chancery Medium Italic ABCDEFghijklmnop123456!"£$&
Don't forget you get Triumvirate Condensed ABCefghij1234!"£%&
And Zapf Dingbats ✡✿❂✱❃❊❉➾➡✓✔✕✖✗❏❑❒▼◆✚✝✎✏✺

Here are the Outline fonts, as produced by a Panasonic laser printer

D.T.P.

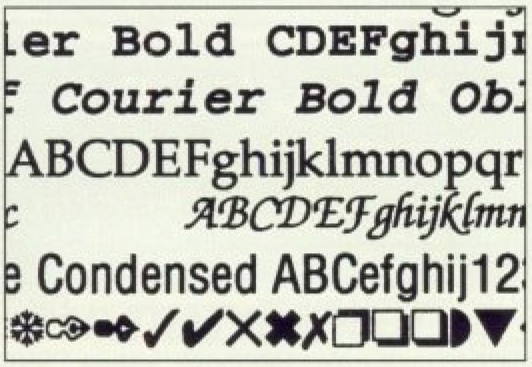
What you design is only as good as you can print it. Nic Veitch uncovers professional output for the financially disadvantaged

as an EPSF (Encapsulated PostScript File).

This means it can be read in to many applications on lesser computers which have a Postscript device attached to them. (Important note: When using Pro Page don't select the option to include bitmaps. This would enable another Amiga graphics system to display a representation of your file, but will only confuse Macs and PCs).

Once you have the file the only problem left is to get it on to a Mac or PC disk. Mac disks are a bit tricky because their floppy drives are designed completely differently. The only way to get around this problem is to buy a Mac floppy drive and the excellent Mac-2-Dos (reviewed in the June issue). This is a bit on the expensive side.

The easier way is to get hold of a PC disk transfer program. There are quite a few around, though the most popular are Dos2Dos and Crossdos. More problematic, but cheaper, is the shareware equivalent, Messydos.



The bureau solution should mean not only a professional job at a fairly reasonable rate, but also the opportunity that no home user could hope to do (unless they are really rich, in which case they should contact me without delay) and still have enough cash to buy *Amiga Computing* every month – use colour.

Most bureau will be able to output colour Postscript files on to film via a linotype. To give you some idea of the quality of output that gives you, these pages were written to film at 1000 dpi, before being sent off to the printers. This may get a little steep but can save a minor fortune if you desperately need 100 copies of a full colour brochure (who knows, the more entrepreneurial of you may be subcontracted by businesses, colleges or old schoolfriends to subsidise your Amiga cravings).

To bring you back to earth though – who really needs it? Most of your work is going to look OK at laser printer or even 24-pin quality. Using Agfa's CompuGraphic fonts, even the lowliest 9-pin can produce excellent results. Don't think that every letter to the milkman needs to be a masterpiece of state of the art printing technology.

When using a laser printer, or when sending off work to be output by a bureau on a laser printer, always remember that because of the nature of these devices a fairly large margin around the edges of an A4 sheet are unavailable.

The exact width of these margins varies slightly from printer to printer, but a rough guide is to leave one inch both top and bottom and at each side.

Also, if you are using a laser printer you may have trouble printing out a complete page. A great many lasers only come with a half meg of memory, which isn't enough for complicated artwork plus scalable fonts.

The only ways to get around this problem is to reduce the density of the printout – the density effects the output resolution from around 75x75 to 300x300 dpi – simplify the page, or buy more memory for your printer.

Extensive research into the fathomless pits of typesetting bureaux led to only two companies who didn't say "Omega what?" when confronted with the dilemma of the Amiga DTPer.

The first of these highly enlightened bureaux is Compuvision (0642- 85079). They can only offer output up to laser quality, but seem to be quite happy with anything you want to throw at them (Postscript, Ascii text...).

The second is Alternative Image (0533 440041), who will handle linotype output of Amiga files. They will take Amiga floppies,but it would be a lot easier – and consequently cheaper – if you could supply Mac or PC disk.

Remember, it is always wise to ring up these chappies beforehand and let them know exactly what you are looking for. They are generally quite helpful and will tell you what is possible and how best to do it.

There used to be a lot more Amiga bureaux, but several seem to have gone out of business. If you own or know of any others please get in touch.

THE following is a list of bureaux that specialise in PC/Mac Postscript, but may be conned into outputting your efforts if you can get them in Postscript format on a Mac or PC floppy.

Birmingham Typesetting (021-565 0565)
Communitype (0533-702270)
Onset (061-368 5073)
Printronics (071-240 8301)
North Computer E.P. (0604-33464)

If you have a modem you should check out the on-line typesetting bureaux in the Comms section (P's and Q's and Publishing Shop).

OOPS!

WHILE compiling a state of the art dissection of the DTP scene there is always the chance that some alien shape-shifters will attempt to interrupt the flow of information. Such an event happened last month as I was attempting to give you details of HB marketing, official Gold Disk support in this country.

Somehow a completely fictitious invoice with a totally inaccurate phone number came to hand, so apologies to all those who tapped in all the digits only to receive the BT equivalent of a raspberry. The correct number is, of course, 0753 686000.

THANKS must go to Compuvision, DTP Today magazine and the Amiga Business Centre who helped track down suitable bureaux. This report has been compiled under the "Aj wants to go home now" reporting restrictions.

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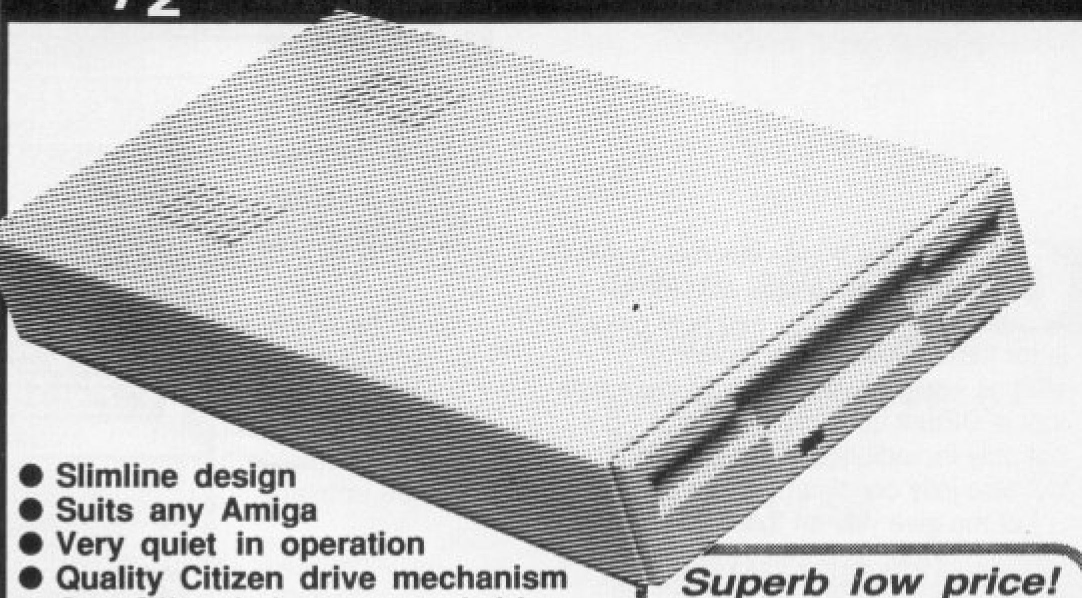
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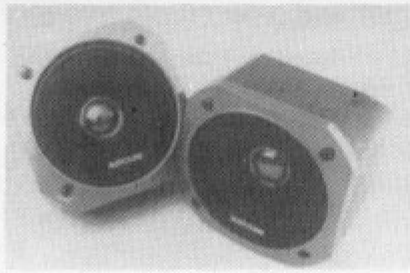
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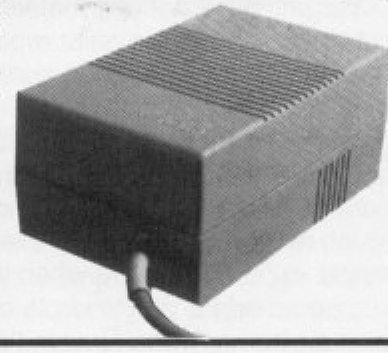
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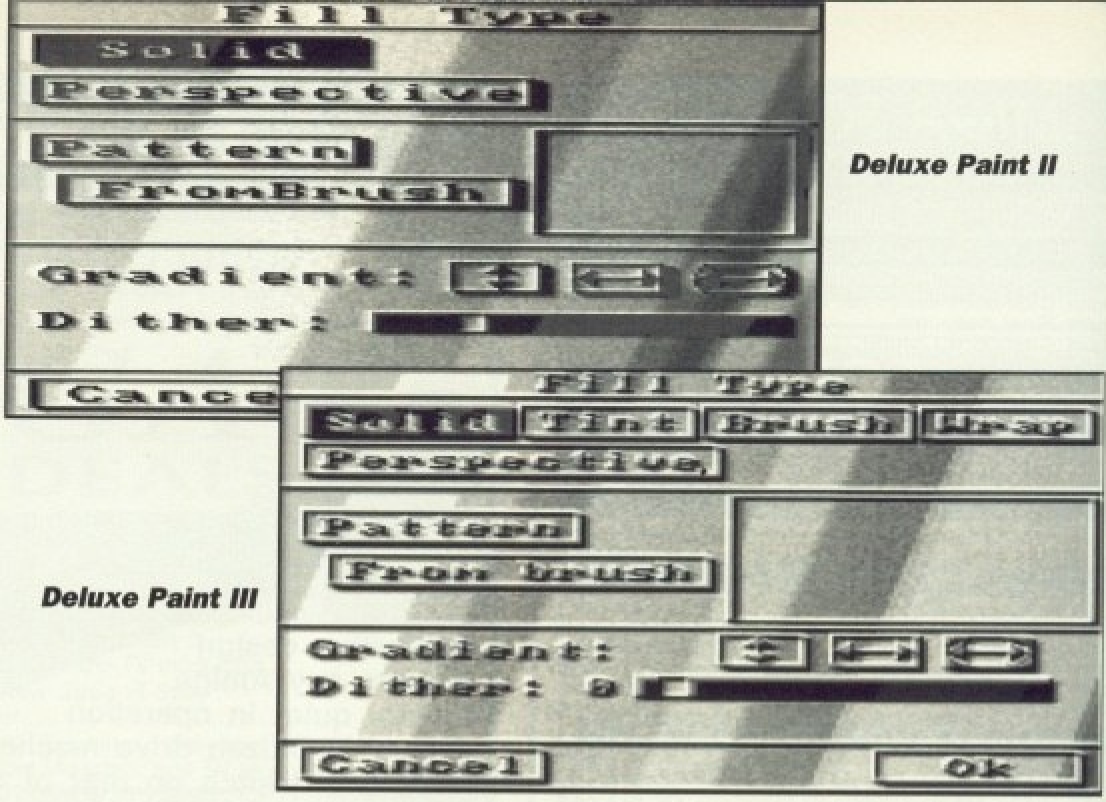
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Deluxe Paint II

Deluxe Paint III

ONE of the things the Amiga artist has to appreciate, and all too often doesn't, is just how easy it is for him to manipulate repeated shapes – namely, brushes. Every single tool in DPaint uses brushes, making it not only incredibly easy to paint with, but also jolly consistent.

Let me give you an example of what I have just said. Set up a 16 colour lo-res screen, pick one of the preset circle brushes from the top right of the toolbox and then draw a Small Picture with it. ("Smileys" are always popular, although some people prefer drawing normal faces. Figure I gives an example of a "Small Picture").

Select "cut rectangular brush" and cut the thing out. Now, ensuring that your background colour is black, hold down the right mouse button and move the brush over the original picture, erasing it.

This is an important technique to remember – holding down the right mouse button paints with the brush's silouhette, coloured the same as the background colour. This is almost always true, but for the moment, don't worry about the "almost".

You will have noticed that when you cut the brush out the paint mode reverted to matte, and the dotted freehand tool was activated. This happens every time you cut a brush, and is worth remembering - it is very easy to ruin a picture by cutting out a brush and only realising you're no longer in "shade" mode when you've slapped a bright yellow circle over the past six hours' work. I know, I've done it many a time.

Pick the line tool, and drag out a line. It will be drawn with your picture instead of dots. Although it's very clever, it's not particularly useful. So press "p" to bring up the palette selector, set the second colour to white (it's normally that horrible fleshy colour) and the very last one to black.

Spread the white to the black to



Figure II: Logo vandalising

create a series of graduated greys, and then click "range" and select white. You have now created a range of colours, with which we may do many interesting things...

Click the right mouse button on the line tool. A requester pops up, not entirely dissimilar from one of the two in Figure II. What we're going to do is break up the line into a series of dots so that the brushes are spaced out more.

If you are using DPII, select "Relative", enter an arbitrary number into the "number" box – use 16 for the moment – and select "on". DPIII users should select "N Total" and enter 16 into the box next to it.

Pick "OK" and the requester goes. Try drawing a line again – you will notice that this time not only is the update faster, but also that the line is made up of only 16 "points" in total. The "Relative" or "N Total" option tells the computer to draw only a certain number of brushes at roughly equal distances from each other.

Now go back to the requester and select either "Absolute" or "Every Nth dot" and enter "16", according to which version you're using. Try drawing a line of roughly the same length. This time, however, instead of having 16 points in the line, the computer draws it so there is a point every 16 pixels along.

One of the nicest things about DP, as I have mentioned previously, is its consistency. And that means that what has just worked on the straight line tool should work on the box tool (it does). It also works on the polygon, curve, circle and ellipse tools. Dan Silva deserves a medal.

For enhanced enjoyment, pick the cycle mode – F7 if you have a keyboard – and, with either "Absolute" or "N total" set to 16, draw a curve or line on the screen. Wow! You now have a completely tacky picture which you hope no one will ever see (I can't work miracles – this is only the second month!).

There are still a few other tricks a brush has up its proverbial sleeve, and these I shall discuss now. You will require a clean brush, so draw a new one, cutting it out with a one pixel border around it so that the box the "cut" tool produces touches, but doesn't go over, the brush.

Now click the right button on the "fill" tool. Either the top or bottom of Figure III magically appears on screen. Select "from brush" and "pattern" to set up a fill pattern from the current brush, then click "OK" and choose a filled shape tool, such as a filled circle.

Draw your favourite–sized circle on screen, and marvel at it's patterned texture. On a less sarcastic note, it is worth remembering that the fill pattern will fit in with the original brush position.

If you, understandably, don't grasp what I'm trying to explain, try drawing a filled shape that partially covers the original brush. You will notice that there is no overlap where the two coincide.

I wish someone would have invented words to describe all these things – I mean, even something as petty as pulling a funny face once a year gets the word "gurning", so I don't see why "the overlap you don't get between a patterned fill and the original brush pattern" doesn't.

It's hard to explain – please note that the DP manual doesn't bother trying. Having a word for it would make it so much easier. Grumble, grumble.

Ha! Got it – what I mean to say is that the position of the pattern in the fill is relative to the original brush position and *not* to the corner of the fill area. If you still don't understand, you'll find out one day the hard way.

The other fill options are not really for us at the moment. Leave them be, they're not going anywhere. A future article will reveal their hidden intricacies.

Meanwhile, back in DPville the more perceptive will have noticed a menu

pertaining to brushes (in best Rowan Atkinson voice) known as the "Brush" menu. Here, all the seemingly tasteless brush warping tools are stored.

It is important to know how to use these inside out in order to produce any effects that may be considered original.

First, cut a new brush. It would be advisable to make it quite large, about 200 by 100 pixels, otherwise the effects will confuse the image. You should paste a copy of this on to the spare page so you can revert to it later if need be.

The first tool to play with has to be the freehand resize. Everyone has used this at sometime or other, and any serious artist is going to need to eventually. Try it – hold down the left button, and move the mouse around to change the brush to any size you want.

The mathematics of the procedure are instantaneous, and can be very useful in that you know what your resized brush will look like. Unfortunately, it usually ends up either as a cross-section of Legoland or a gritty mess. There is, however, a way of getting around this.

Curiously enough, the options for this are not in the brush menu – they are in fact in the perspective menu, tucked away under "extras".

First the antialias should be set to "high" and the perspective centre positioned in a clear area of the screen – on the spare page if possible. You should then select "do" from the perspective menu – or enter from the keyboard – and position the centre of the brush grid over the perspective centre.

Now use the **#** and **;** keys to move the brush into or out of the screen. You must use the grid to work out when the brush is the right size, and when it is, slam the left (or right!) button.

The computer draws your brush on to the screen.

This can take up to a minute or more, but the result is worth it. The brush which you have just created is not only resized with correct proportions, but also is antialiased so that there are no jagged lines and only a minimal loss of detail.

Why not use this all the time? Well, first you need some blank space to render the brush into. This shouldn't pose too many problems. The second, and more pressing problem, is that you cannot change the palette after using this method.

The reason for this is that antialias uses extra colours that may not necessarily be used in the original brush. What happens is that when two pixels need to occupy the same space in the resized brush DP looks at their combined RGB values and takes the average.

It then looks at the palette and finds the closest colour to this, and uses it in their place. If you then change that colour yourself, wrongly assuming that it's not been used, the careful blending produced by the smoothing is ruined. Also it's slow, and doesn't allow you to change the shape of the brush – In other words, it's width to height ratio must remain equal.

Another well-used function is rotating a brush. However, like resize, it suffers from terminal grittiness – try rotating a stripey brush through 27 degrees!

However, there is an alternative – employing perspective. Use exactly the same method as for resizing, but instead of using moving the brush along the z-plane, try rotating around it. The antialias will tidy up the final brush, but it still suffers from the same problems as resizing.

GRAPHICS

Once again all things arty are under the eye of Dave Mee, self-styled linguistics critic and logo vandal

In the same menu, the shear function seems rather limited – after all, it only works in one direction and doesn't seem to produce anything interesting. Its real power lies in using it to create brushes for editing, as opposed to creating pictures directly.

It's a tool to make other tools really, so don't worry about not using it – it will be explained fully 31 days from now (assuming you buy next month's issue).

The last function, bend, is my favourite. It is used (surprisingly enough) to bend a brush. It is not a true bend, as the ends of the brush remain parallel to each other, instead of being perpendicular to the sides. Nevertheless, it's good fun. Let's make the *Amiga Computing* logo a little more interesting with it (Oi! Leave that alone you vandal!).

First paste the logo down. Then cut a small vertical strip from it, choose bend vertical, and "push" the centre of the brush upwards.

Paste it down somewhere, and then do the same again with the next strip along, but bending it downwards. Do this until the whole brush has been copied (second illustration in Figure II).

For a really weird touch do the same thing again, but cut and bend horizontal strips, alternating left and right. The result is a markedly more interesting brush (third illustration).

You may need to tidy it up a little before final presentation, but with the addition of a small background (fourth illustration) you can very easily produce a rather impressive logo in a matter of minutes.

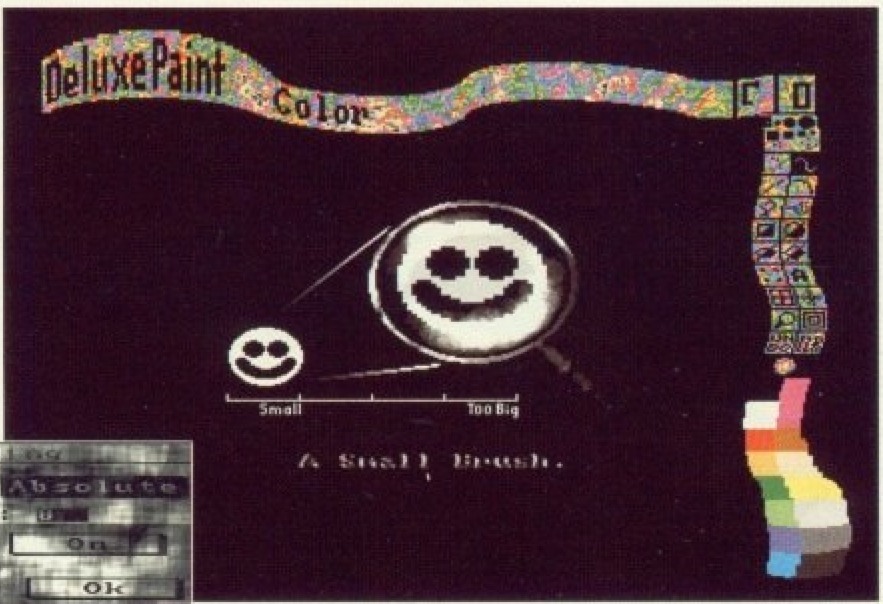


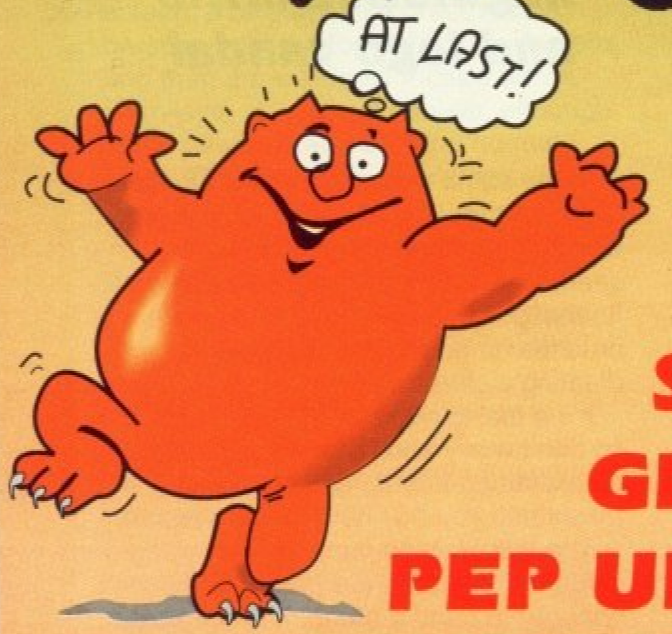
Figure I: Twisting time again



Deluxe Paint II (top)
Deluxe Paint III (bottom)

NEXT MONTH: More brushing up, and how to use resize and rotate and get away with it PLUS Dave Mee threatens to use a box! Be there or be a rotated/resized polygon.

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AMC 11

WOTCHA, it's me again, here to update you on the wonderful world of AMOS. Since our last meeting so much has happened it's hard to know where to start.

Probably the most important thing is that a new version of AMOS is now available, so get a copy from the AMOS PD library (phone Sandra Sharkey on 0942 495 261 for more details. The improved V1.2 has a vast number of bug fixes, including those listed below.

Amos V1.2 Bug Fixes

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Y HARD	Returns the correct value
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VAL	Works with negative floating point numbers
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I SPRITE I BOB	Both are now tokenised (comput erese for recog-nised)
AMAL OR	Corrected
UNPACK	Works properly now with portions of screens

AMOS V1.2 also includes a new file selector and a number of new commands, most important being the new BOB and SPRITE flipping routines. These commands allow you to reverse the image of a bob both horizontally and vertically and are completely compatible with AMAL.

Available in your shops now are some of the first products written with AMOS, all of which are published by Database Software. The software is Fun School 3 and consists of three separate packages aimed at the under 5s, 5 to 7s and over 7s. Each package uses very high quality graphics (better than a lot of games) and adheres closely to the much publicised national curriculum. I strongly recommend you go out and buy all three, not only because they are excellent products, but because I wrote them! I might as well get my plug in now 'cos I didn't get a mention in the first draft of the manuals.

Lastly in this little news file is some information for comms users. Amiga Connection BBS and Big Bang Burger Bar BBS run a joint AMOS section containing quite a few programs to download. It also gives you access to other AMOS users and because they are both just a local phone call away from me, I can be found routing around on both at weekends. The two Sysops are big AMOS fans and use it regularly, so Hi to Paul Roffey and Paul Robert. I'll upload some more stuff when I get back from my holiday.

OK, lets do some work. AMAL – the AMos Animation Language – is the most advanced feature of AMOS. With it you can move or animate SPRITEs, BOBs, Rainbows and even whole screens.

Its use is not limited to games, you could do shop demos, fun demos or produce animated titles for your videos.

We will start by loading a sprite file to play with, so press Escape to go to direct mode, insert your AMOS Data Disk – the one with all of the games on it – and type this

```
LOAD "AMOS_DATA:MAGIC_FOREST/MFSPRITES.ABK"
```

This will load the sprites from Magic Forest into bank number one. You may wonder why we are doing this in direct mode. It's mainly because we need to be able to see immediate results and it is not too important to save the files on to disk.

Now we need to set up a nice clean screen display :

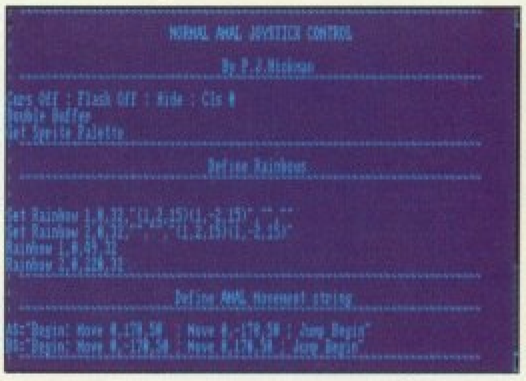
```
FLASH OFF : CLS 0 : GET SPRITE PALETTE :
DOUBLE BUFFER
```

Right now to display a bob and set up its AMAL channel

```
BOB 1,50,50,1 : CHANNEL 1 TO BOB 1
```

We have our little geezer displayed on the screen,but we want to move him. The first thing to remember when dealing with AMOS is that unless you are converting a ST program never use the STOS compatible MOVE X or MOVE Y commands. They are nowhere near as flexible as AMAL and you will quite often end up with some very tacky movement.

To move this funny little creature we have to define an AMAL program. AMAL is quite simple to use, a lot of people have told me they found the manual explanation quite daunting, so I won't rush and we'll go through each command step by step.

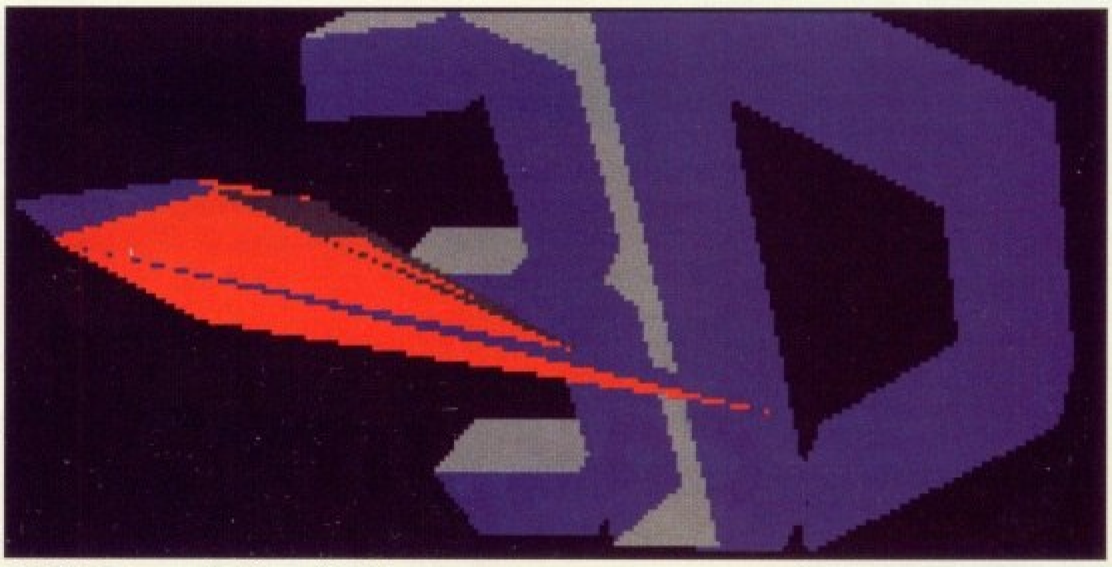


The first thing to remember is that AMAL is a case dependant sub-language – more compterese for saying that it can tell if you have typed in capitals or lowercase letters. Any commands that we enter into our AMAL string will have at least one letter in upper case and the rest in lowercase.

Of course this isn't quite true for all AMAL commands, because a very few require two uppercase letters ,but we won't worry about those for the time being.

To move an object we have to use a command called Move (surprised huh?), which uses three parameters. The first is the number of pixels the object should move in the X direction, that is across the screen. The second is the number of pixels we wish to move up (or down) the screen, remembering that both these parameters can be positive or negative numbers for backwards or forwards movement.

The very last parameter controls the amount of steps that AMAL will take to move your object in the X or Y direc-



AMOS 3D – coming to an Amiga near you

tions.

I know it sounds a little complex but it really is flexible. Let's try an example – remember to type this EXACTLY as shown here:

```
AMAL 1,"Move 16,0,1" : AMAL ON 1
```

You will see that the geezer we set up earlier has moved smoothly from his origin (50,50) across 16 pixels in one pixel increments. Try this one:

```
AMAL 1,"Move 16,0,4" : AMAL ON 1
```

It moved a little faster this time because we changed the last parameter in the Move command. It is a little like saying "Move the object 16 pixels, but I want it done in four separate goes."

OK, last example for this bit :

```
AMAL 1,"Move 16,0,16" : AMAL ON 1
```

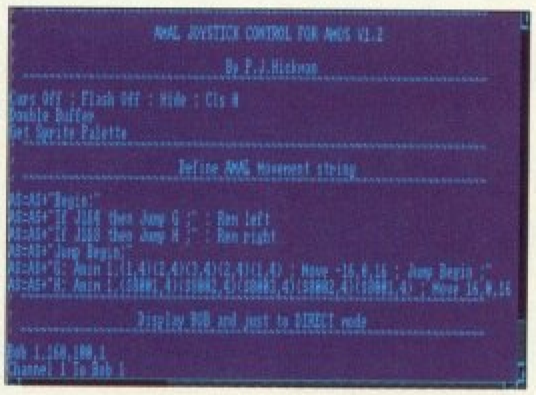
If you have managed to follow what I have been saying you will realise that our little geezer has just moved 16 pixels in increments of 16 pixels.

I hope you have now mastered the simple techniques required to produce fun moving characters. Remember that, as my mate Aaron Fothergill (editor of the AMOS club magazine), always says: "No program is fixed, you should always get lots of people to try it out and tweak it accordingly."

Now we are running out of room for this issue, so lets cover a little animation. The animation command in AMAL has a very simple structure. Type this in direct mode:

```
AMAL 1,"Anim 0,(1,4)(2,4)(3,4)(2,4)(1,4)"
AMAL ON 1
```

Our little geezer should be waving his dinky legs like there is no tomorrow. As you can see, we first put an Anim command in the string (with its first letter in capitals) followed immediately by the amount of times you wish to repeat the animation. If you put a zero the animation will repeat indefinitely.



The next parameters are the actual animation numbers, these are stored in brackets and consist of the image number of the frame stored in the SPRITE/BOB bank followed by a comma and then the time you wish to elaps before the next animation frame is displayed.

Well,I hope that hasn't put you off AMAL 'cos next time we are going to tackle joystick–controlled animation. The programs on the Cover Disk this month are slightly more advanced versions of the routines we have been looking at here, containing a mixture of animation and movement commands.

Also on there is the moving rainbow for our game background (all done using AMAL). I didn't quite have room to fit it into this month's column so it will have to wait.

As if that wasn't enough for people who have got the V1.2 upgrade, there is a little program on the cover disk which will show you how to save memory by using the new SPRITE flipping routines.

See if you can produce some good little demo between now and the next issue, if you do why not put then into the public domain so that all AMOS users can see them?

Before I go, if anybody from the RSPCA is reading this column I would just like to report Richard Vanner of Database Software for not feeding his cat until he got home at 2 o'clock on Tuesday September 11th.

This was due to a few last minute bugs (now corrected) in the Over 7s part of Fun School 3!

AMOS Simple sprite plotter instructions

THIS program is a simple utility that allows you to take AMOS sprites and paste them onto an IFF screen ready for loading into Deluxe Paint, or porting over to another computer (such as the Atari ST). The program also draws a border around the sprite. The controls are pretty simple – once you have loaded a sprite bank that is!

KEY	USE
+	Moves to next sprite in bank.
-	Moves back one sprite.
A	Changes the sprite border colour register (adds one).
Z	Changes the sprite border colour register (decs one).
L	Loads a new sprite bank (but does not clear the screen).
S	Saves the picture in IFF format.
C	Clears the screen.
U	A simple undo feature. Be careful, once pressed there is no way of going back.
Q	Quits back to AMOS.

If you press left and right mouse button (in that order) the current bob will be pasted onto the screen.

AMOS

Peter Hickman irons out a few bugs and takes a look at the unique animation language which makes AMOS so special

Next month we will cover some of the intermediate level features of AMAL, including joystick control and synchronised movement and animation.



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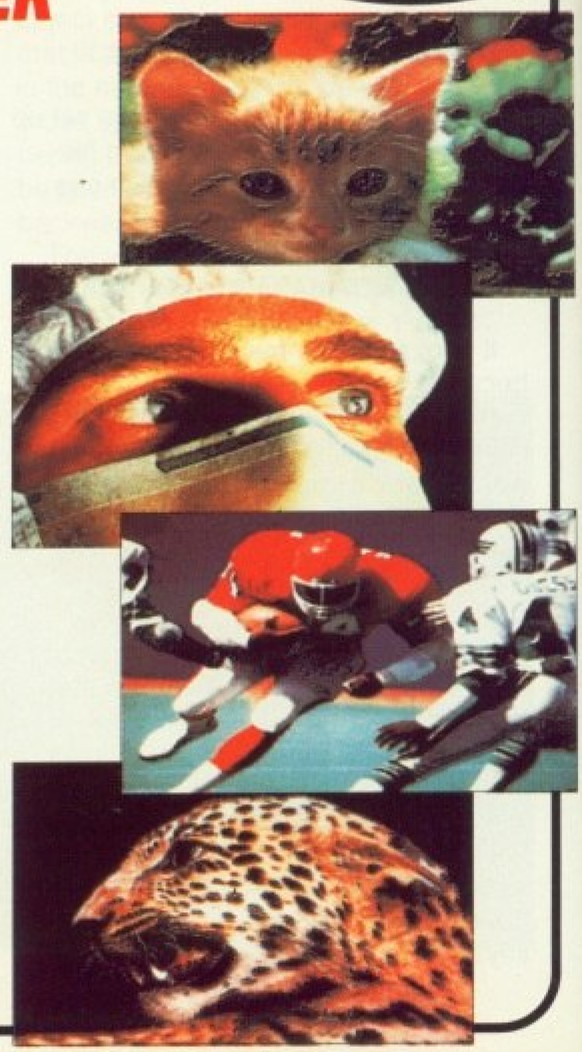
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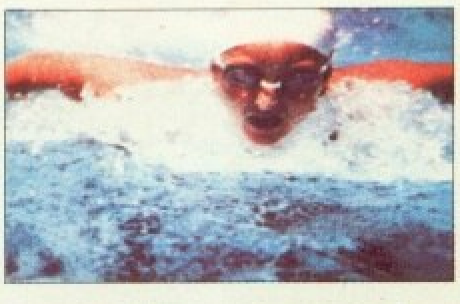
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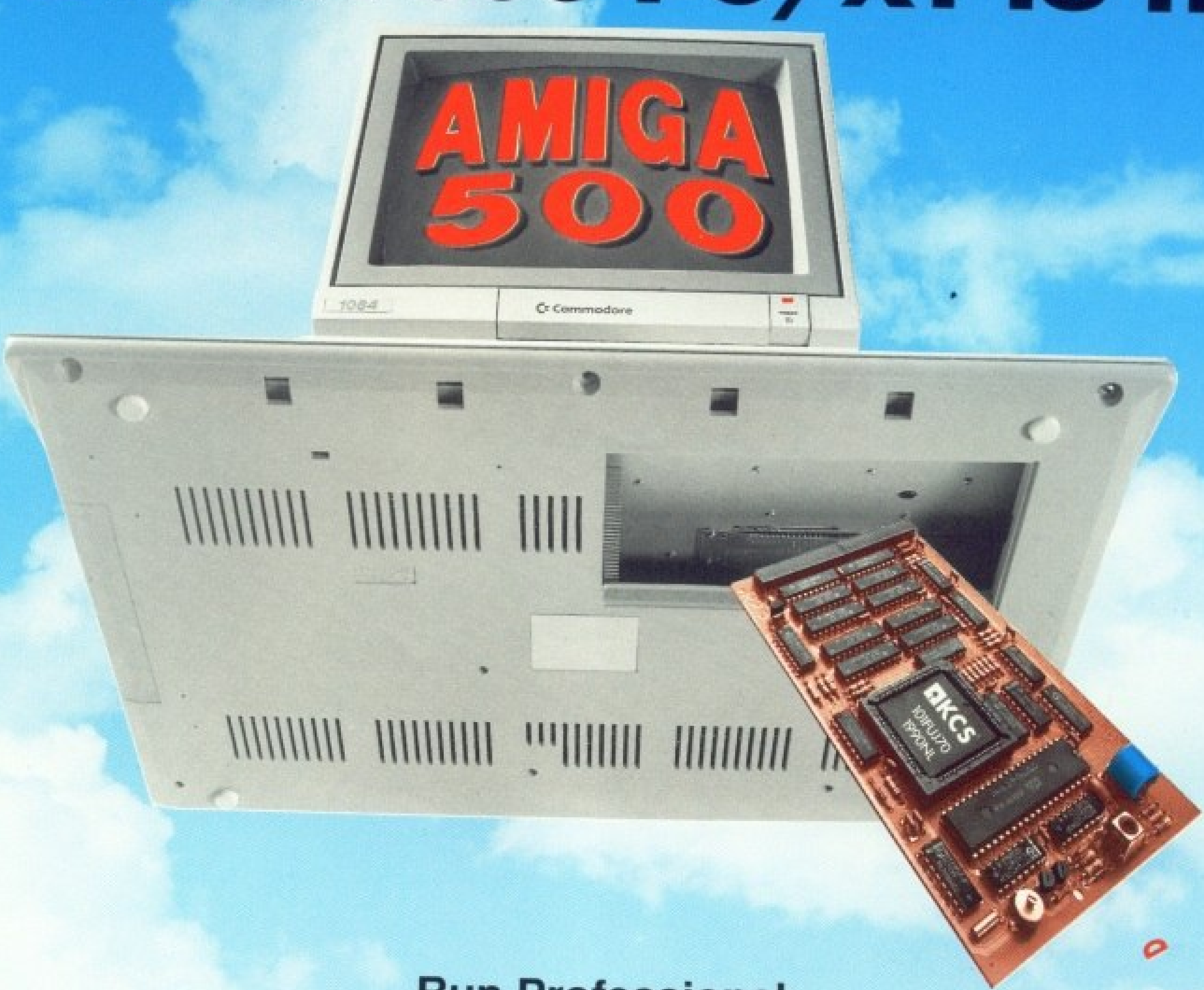
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